990. k. 13

M.r Banks
New Burlington Street

BRITISH ZOOLOGY.

Claſs III. REPTILES.

IV. FISH.

Aſt ego deſpectis quæ cenſus opeſque dederunt
Naturæ mirabor opus. AUSONIUS.

VOL. III.

CHESTER,
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Jos: Banks

TO

THOMAS FALCONER, Esq;

OF

CHESTER.

IT is but justice, my dear TOM, to address to you a work which was begun with your approbation, carried on under your improving strictures, and has so often amused us during the many pleasing hours we have passed together.

At the same time that I own the many advantages I have reaped from making you confident to the productions of an idle and rural pen; let me not fail in my acknowlegements to our common friend the Hon. DAINES BARRINGTON, who, with unremitting ardor, and with an honest freedom, has favored me with the most instructive hints on the subject of the following sheets.

Would! would to Heaven that I was capable of adding the third to the number! But the grateful tribute of a

ſigh is all I can give to what is now become only an inſtructive memory. Simplicity of manners, zealous friendſhip, the promotion of all liberal arts, univerſal benevolence, with its amiable attendant charity, characteriſed the Prelate whoſe loſs I deplore. You I know will excuſe theſe expreſſions of ſenſibility, when you recollect it is Dr. LITTLETON, late Biſhop of CARLISLE, whom I lament.

May you live long and happy, is the earneſt wiſh of him, who is, with the trueſt regard,

Your moſt affectionate kinſman,

And faithful humble ſervant,

Downing,
March 25, 1769.

Thomas Pennant.

ERRATA.

Page 21,	*dele* **, and ** xxix.	*c.* 3.
22,	Attingot,	Attingat.
51,	gives	give.
56,	thoſe *(the firſt)*	theſe.
65,	ιχζυσιν,	ιχθυσιν.
66,	inſtrument,	inſtruments.
67,	NAPKE,	NAPKH.
68,	impute,	impart.
69,	leaſt	leſt.
83,	aſſunder,	aſunder.
90,	are,	is.
94,	*Note*, ſecond of	ſecond book of.
115,	aſſure,	aſſures.
135,	twelve,	ſix.
140,	extirminate,	exterminate.
171,	*Gunnellis*,	*Gunnellus*.
173,	fins,	fin.
213,	*le Soup*,	le Loup.
251,	intercepter,	intercepte.
236,	abound,	abounds.
298,	*Note*, on,	*on*.
	moutant,	*montant*.
306,	*norit*,	to be placed under *Quis?*
310,	**	to be placed, p. 309, over
	without beards,	BREAM.
315	*venera*,	*venena*.

ADVERTISEMENT.

INDIAN ZOOLOGY.

PART I.

Conſiſting of Twelve Plates, 4to. Imperial, with Deſcriptions.

THIS Work will be continued and completed in Six Numbers, containing Figures of undeſcribed Birds and Quadrupeds, with ſome Eſſays on the *Indian* Animals mentioned by the Antients, obſcured by Fable, &c.

Sold by Mr. WHITE, Bookſeller, in *Fleet-ſtreet*, and Mr. WALTERS, at *Charing-Croſs*.

CLASS III.

REPTILES.

All the works of the LORD are good, and he will give every needful thing in due ſeaſon.

So that a man cannot ſay this is worſe than that, for in time they ſhall all be well approved.

Eccleſiaſticus xxxix. 33, 34.

REPTILES.

WE are now to conſider the claſs of reptiles, which are, for the moſt part, objects of deteſtation; but however the opinion of the world may be, if a writer undertakes a general hiſtory of animals, he muſt include them: they form at leſt one link in the chain of beings, and may therefore be viewed with a degree of pleaſure by a philoſophic eye.

But notwithſtanding the prejudice againſt this claſs is almoſt univerſal, is it founded on reaſon? In ſome it may be owned that the outward form is diſagreeable, while the noxious qualities of others are juſtly productive of terror: but are we on that account to reject them? The more fatal they are, the more deeply we ſhould enquire into their effects, that we may be capable of relieving thoſe who are ſufferers, and ſecure others from the ſame misfortune. But if we duly weigh their noxious qualities, we ſhall, with our moral poet, find

"*All partial evil univerſal good.*"

The teeth of wild beaſts, and of ſerpents, are not only created as inſtruments of vengeance, but are ſalutary in leſſening the numbers of thoſe animals which are highly uſeful in the degree, and only hurtful in their exceſs; but if their bad qualities are ſerviceable, we are more indebted to their good ones than we chuſe to acknowlege.

But many of the animals that form this claſs are of immediate benefit to mankind. The Turtle, or Sea-Tortoiſe, ſupplies the torrid zone with a wholeſome and delicious food, as the epicures of our own country can atteſt. Frogs are a food in ſeveral parts, as Lizards and Serpents are in others.

The medicinal virtues of the Viper are partly exploded by the moderns, but time, the overthrower of ſyſtems, as well as empires, may reſtore it to the rank it held with the antients. The *Lacerta Scincus* is, however, yet eſteemed in the *Eaſt* for its ſalubrious qualities, and even Toads have contributed to the eaſe of patients in the moſt inveterate of all diſeaſes.

Had I followed *Linnæus*, and included the Cartilaginous Fiſh in this claſs, there would have been ample room for panegyric, for it is very doubtful whether any are pernicious; but the uſes of many, either as food or for mechanical purpoſes, were never queſtioned.

But if the external figure of the reptile tribe is diſguſting, they have one general beauty, an apt configuration of parts for their way of life, nor are they deſtitute of their peculiar graces: the fine diſpoſition of plates in the ſhell of the Tortoiſe, with the elegant ſymmetry of their colors, muſt ſtrike even common obſervers, while the eye of the deſpiſed Toad has a luſtre denied to more pleaſing forms. The frolicſome agility of Lizards enliven the dried banks in hot climates, and the great affection which ſome of them ſhew to mankind, ſhould farther engage our regard and attention.

The

The wreathing of the Snake, with the vivid die of its ſkin, are certainly graceful, tho' from the dread of ſome particular ſpecies which are venemous, we have acquired an antipathy for the whole. The antients, who conſidered the Serpent as an emblem of health, could aſſociate pleaſing ideas with this animal. We therefore find it an ornament at every entertainment, and in every ſcene of mirth, both in painting and in ſculpture. *Virgil* adopted this notion, and has accordingly deſcribed it with every beauty both of form and color,

Adytis cum lubricus anguis ab imis
Septem ingens gyros, ſeptena volumina traxit;
Amplexus placidé tumulum, lapſuſque per aras:
Cæruleæ cui terga notæ, maculoſus et auro
Squamam incendebat fulgor; ceu nubibus arcus
Mille trahit varios adverſo ſole calores.

V. 84.

From the deep tomb, with many a ſhining fold,
An azure ſerpent roſe, in ſcales that flam'd with gold:
Like heaven's bright bow his varying beauties ſhone
That draws a thouſand colors from the ſun:
Pleas'd round the altars and the tomb to wind,
His glittering length of volumes trails behind.

Pitt.

But if after all ſome lively writer ſhould purſue the Naturaliſts with more wit than argument, and more humor than good-nature, it ſhould be endured with patience. Ridicule is, however, not the teſt of truth, tho' when joined to ſatyr, it ſeldom fails

of ſeducing the many who had rather laugh than think. Should this prove the caſe in the preſent inſtance, let the author be allowed to ſkreen himſelf from cenſure, by ſaying he writes not to the many, but the few; to thoſe alone who can examine the parts with a view to the *whole*, and who ſcorn to deſpiſe even the moſt deformed, or the moſt minute work of an all-wiſe CREATOR.

GENERA.

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BRITISH

BRITISH ZOOLOGY.

Claſs III.

REPTILES.

Genus I. Body covered either with a ſhell or ſtrong hide, divided by ſutures; four fin-like feet; a ſhort tail. TORTOISE.

I. The SPINOUS TORTOISE.

Teſtudo coriacea ſive Mercurii *Rondel.* 450? *Geſner piſc.* 946? Teſtudo coriacea? Teſtudo pedibus pinniformibus muticis, teſta coriacea, cauda angulis ſeptem exaratis. *Lin. ſyſt.* 350.
Turtle. *Borlaſe Cornwall*, 285. *Plate* 27.

THIS ſpecies (if the *teſtudo coriacea*) ſeems common to the *Mediterranean*, and to our ſouthern ſeas, and is not, as far as we know, diſcovered in any other.

Two were taken on the coaſt of *Cornwall* in the mackrel nets, of a vaſt ſize, a little after *Midſummer* 1756; the largeſt weighed eight hundred pounds, the leſſer near ſeven hundred.

Doctor *Borlaſe* firſt publiſhed theſe animals to the world, and diſcovered them in our ſeas.

He deſcribes them as having ſeven ſpiny or ſerrated ridges running from the head to the tail, dividing the upper part of the back into equal parts.

The fore legs, as appear by his figure, are remarkably long and narrow, flat, ſmooth, and fleſhy, being deſtitute of ſcales. The color of their upper ſide bluiſh, their under ſide, as well as that of the neck, ruddy, ſpeckled with black.

We ſuſpect an error in the number of the hind legs, the figure being repreſented with four, an exceſs we never have met with in any of this genus.

The head is painted extremely ſmall, in proportion to the ſize of the animal, whoſe length was ſix feet nine inches, and breadth from the tip of one fore leg to that of the other ten feet four inches.

Size.

The covering of this ſpecies is compared to that of the *Teſtudo coriacea* of *Rondeletius*, which has an integument reſembling a tough ſtrong hide; and what is very ſingular, neither that of the *Corniſh* ſpecies, nor yet that of the *French* naturaliſt, ſeem by the figures to be divided into angular compartments by tranſverſe ſutures, like the ſhells of all tortoiſes we have ever met with. But the hiſtory of this kind remains ſtill very obſcure: it is therefore to be wiſhed, that particular attention be paid to the next that is taken on our coaſts; and that obſervation be made whether the covering is cruſtaceous or coriaceous, that we may be aſſured that theſe were the *European* kind, not the *American*; it ſeeming not improbable but they might be a couple that had eſcaped out of ſome *Weſt India* ſhip that had foundered, or been caſt away near the *Corniſh* coaſt.

Genus

Genus II. Body naked.
Four legs, the feet divided into toes.
No tail. FROGS.

I. The COMMON FROG.

Βατραχος. *Ariſt. Hiſt. an. lib.* iv. c. ix.
La Greñoille. *Belon poiſſons*, 48.
Rana fluviorum. *Rondel.* 217.
Rana aquatica innoxia. *Geſner quad. ovip.* 46. *Aquatil.* 805.
Rana aquatica. *Raii ſyn quad.* 447.
Waſſer Froſche. *Meyer an.* I. *tab.* 52.
Rana temporaria. R. dorſo planiuſculo ſubangulato. *Lin. ſyſt.* 357.
Groda, Fro, Klaſſa. *Faun. ſuec. No.* 102.
Rana. *Gronov. Zooph. No.* 62.

SO common and well-known an animal requires no deſcription; but ſome of its properties are ſo ſingular that we cannot paſs them unnoticed.

Its ſpring or power of taking large leaps is remarkably great, and it is the beſt ſwimmer of all four-footed animals. Nature hath finely adapted its parts for thoſe ends, the fore members of the body being very lightly made, the hind legs and thighs very long, and furniſhed with very ſtrong muſcles.

While in a tadpole ſtate it is entirely a water-animal; the work of generation is performed in that element, as may be ſeen in every pond during ſpring; when the female remains oppreſſed by the male for a number of days.

The work of propagation is extremely ſingular, it being certain that the frog has not a *penis intrans*; there appears a ſtrong analogy in this caſe between a certain claſs of the vegetable kingdom and thoſe Generation.

animals; for it is well known, that when the female frog depoſits its ſpawn, the male inſtantaneouſly impregnates it with what we may call a *farina fœcundans*, in the ſame manner as the male *Palm* tree conveys fructification to the flowers of the female, which would otherwiſe be barren *.

As ſoon as the frogs are releaſed from their tadpole ſtate they immediately take to land; and if the weather has been hot, and there fall any refreſhing ſhowers, you may ſee the ground for a conſiderable ſpace perfectly blackened by Myriads of theſe animalcules, ſeeking for ſome ſecure lurking places. Some philoſophers** not giving themſelves time to examine into this phænomenon, imagined them to have been generated in the clouds, and ſhowered on the earth; but had they, like our *Derham* †, but traced them to the next pool, they would have found a better ſolution of the difficulty.

As frogs adhere cloſely to the backs of their own ſpecies, ſo we know they will do the ſame by fiſh: *Walton* ‡ mentions a ſtrange ſtory of their deſtroying pike; but that they will injure, if not entirely kill carp, is a fact indiſputable, from the following relation: a very few years ago on fiſhing a pond belonging to Mr. *Pit*, of *Encomb*, *Dorſetſhire*, great numbers of the carp were found each with a frog mounted on it, the hind legs clinging to the back, the fore legs fixed in the corner of each eye of the fiſh, which were thin and greatly waſted, teized by car-

* *Shaw's Travels*, 224. *Haſſelquiſt Trav. Engl. Ed.* 416.
** *Rondeletius*, 216. *Wormii Muſ.* 327.
† *Ray's Wiſdom Creat.* 316. ‡ *Complete Angler*, 161.

rying

rying ſo diſagreeable a load. Theſe frogs we imagine to have been males diſappointed of a mate.

The croaking of frogs is well known, and from that in fenny countries they are diſtinguiſhed by ludicrous titles, thus they are ſtiled *Dutch Nightingales* and *Boſton Waites*; even the *Stygian* frogs have not eſcaped notice, for *Ariſtophanes* hath gone farther, and formed a chorus of them.

Βρεκεκέξ, κοάξ, κοαξ,
Βρεκεκεξ, κοαξ, κοαξ,
Λιμναῖα χρηνῶν τεκνα *.

Brekekex, coax, coax,
Brekekex, coax, coax,
The offspring of the pools and fountains.

Yet there is a time of year when they become mute, neither croaking nor opening their mouths for a whole month: this happens in the hot ſeaſon, and that is in many places known to the country people by the name of the *Paddock Moon*. Periodical Silence.

*Morton*** endeavours to find a reaſon for their ſilence, but tho' his facts are true, he is unfortunate in his philoſophy. Frogs are certainly endued (as he well obſerved) with a power of living a good while under water without reſpiration, which is owing to their lungs being compoſed of a ſeries of bladders: but he miſtakes the nature of air, when he affirms that they receive a quantity of cool air, and dare not open their mouths for a month, from a dread of admitting a warmer into their lungs. It is hardly neceſſary to ſay, that in whatever ſtate the air was received, it

* *Comedy of the Frogs.* ** *Hiſt. Northampt.* 441.

would assimilate itself to the external atmosphere in a short time. We must leave the fact to be accounted for by farther experiments. But from what we do know, we may partly vindicate *Theophrastus*, and other antients, about the silence of the frogs at *Seriphus*. That philosopher affirms it, but ascribes it to the coldness of the waters in that island: Now when Monsieur *Tournefort* was there, the waters were lukewarm, and the frogs had recovered their voices *. Is it not probable that *Theophrastus* might be at *Seriphus* at that season when the frogs were mute, and having never observed it elsewhere, might conclude their silence to be general as to the time, but particular as to the place. *Ælian***, who quotes *Theophrastus* for the last passage, ascribes the same silence to the frogs of the lake *Pierus* in *Thessaly*, and about *Cyrene* in *Africa*: but he is so uncertain a writer, that we cannot affirm whether the species of the *African* frogs is the same with ours.

Food. These, as well as all other reptiles, feed but a small space of the year. The food of this genus is flies, insects, and snails. Toads are said to feed also on bees, and to do great injury to those useful insects.

During winter frogs and toads remain in a torpid state: the last of which will dig into the earth and cover themselves with almost the same agility as the mole.

* *Tournefort's voy.* I. 142.

** *Ælian lib.* iii. *ch.* 35, 37.

II. The

II. The GIBBOUS FROG.

Rana gibboſa. *Geſner piſc.* 809.
Rana eſculenta. *Lin. ſyſt.* 357. *Faun. ſuec. No.* 279.
R. corpore angulato, dorſo tranſverſè gibbo, abdomine marginato. *Ibid.*

THIS differs from the former in having a high protuberance in the middle of the back, forming a very ſharp angle. Its colors are alſo more vivid, and its marks more diſtinct; the ground color being a pale or yellowiſh green, marked with rows of black ſpots from the head to the rump.

This and, we think, the former are eaten. We have ſeen in the markets at *Paris* whole hampers full, which the venders were preparing for the table by ſkinning and cutting off the fore parts, the loins and legs only being kept. Our ſtrong diſlike to theſe reptiles, prevented a cloſe examination into the ſpecies. Eatable.

III. The TOAD.

Φρυνος. *Ariſt. Hiſt. an. lib.* ix. *c.* I. 40.
Bufo. *Virg. Georg.* I. 184. Rubeta. *Plin. lib.* viii. *c.* 31.
Rubeta ſc. Phrynum. *Geſner piſc.* 807. *Rondel,* 222.
Bufo ſive Rubeta. *Raii ſyn. quad.* 252.
Bufo rubetarum. *Klein quad.* 122.
Rana Bufo. R. corpore ventricoſo, verrucoſo lurido fuſcoque. *Lin. ſyſt.* 354.
Padda, Taſſa. *Faun. ſuec. No.* 275.
Gronov. Zooph. No. 64.

THE moſt deformed and hideous of all animals; the body broad, the back flat, and covered with a pimply duſky hide; the belly large,

ſwagging, and ſwelling out; the legs ſhort, and its pace labored and crawling: its retreat gloomy and filthy: in ſhort, its general appearance is ſuch as to ſtrike one with diſguſt and horror; yet we have been told by thoſe who have reſolution to view it with attention, that its eyes are fine: to this it ſeems that *Shakeſpear* alludes, when he makes his *Juliet* remark,

Some ſay the lark and loathed toad change eyes.

As if they would have been better beſtowed on ſo charming a ſongſter than on this raucous reptile.

But the hideous appearance of the toad is ſuch as to make this one advantageous feature overlooked, and to have rendered it in all ages an object of horror, and the origin of moſt tremendous inventions. *Ælian** makes its venom ſo potent, that *Baſiliſk*-like it conveyed death by its very look and breath; but *Juvenal* is content with making the *Roman* ladies, who were weary of their huſbands, form a potion from its entrails**, in order to get rid of the good man.

Occurrit Matrona potens, quæ molle calenum
Porrectura viro miſcet ſitiente rubetam. *Sat.* I. 68.

To quench the huſband's parching thirſt, is brought
By the great Dame, a moſt deceitful draught;
In rich *calenian* wine ſhe does infuſe,
(To eaſe his pains) the toad's envenom'd juice.

This opinion begat others of a more dreadful nature; for in after-times ſuperſtition gave it preterna-

* *Hiſt. an. lib.* ix. *c.* 11.
** *Sat.* vi. 658. Vide *Ælian Hiſt. an. lib.* xvii. *c.* 12 and 15.

tural

tural powers, and made it a principal ingredient in the incantations of nocturnal hags:

> Toad that under the cold ſtone,
> Days and nights, has thirty-one,
> Swelter'd venom ſleeping got,
> Boil thou, *firſt* i' th' charmed pot.

We know by the poet that this charm was intended for a deſign of the firſt conſideration, that of raiſing the dead from their repoſe, and bringing before the eyes of *Macbeth* a hateful ſecond-ſight of the proſperity of *Banquo*'s line.

This ſhews the mighty powers attributed to this animal by the dealers in the magic art; but the powers our poet indues it with, are far ſuperior to thoſe than *Geſner* aſcribes to it: *Shakeſpear*'s witches uſed it to diſturb the dead; *Geſner*'s, only to ſtill the living, *Ut vim coeundi ni fallor, in viris tollerent* *.

Toad-ſtone.

We may add here another ſuperſtition in reſpect to this animal: it was believed by ſome old writers to have a ſtone in its head, fraught with great virtues medical and magical: it was diſtinguiſhed by the name of the Reptile, and called the *Toad-Stone*, *Bufonites*, *Crapaudine*, *Krottenſtein* **; but all its fancied powers vaniſhed on the diſcovery of its being nothing but the foſſil tooth of the *ſea wolf*, or of ſome flat-toothed fiſh, not unfrequent in our iſland, as well as ſeveral other countries; but we may well excuſe this tale, ſince *Shakeſpear* has extracted from it a ſimile of uncommon beauty:

* *Hiſt. quad. ovip.* 72.
** *Boet. de Boot. de Lap. et Gem.* 301. 303.

Sweet

Sweet are the uſes of adverſity,
Which, like the toad, ugly and venomous,
Wears yet a precious jewel in his head.

But theſe fables have been long exploded: we ſhall now return to the notion of its being a poiſonous animal, and deliver as our opinion, that its exceſſive deformity, joined to the faculty it has of emitting a juice from its pimples, and a duſky liquid from its hind parts, is the foundation of the report.

That it has any noxious qualities we have been unable to bring proofs in the ſmalleſt degree ſatisfactory, tho' we have heard many ſtrange relations on that point.

Not poiſonous.

On the contrary, we know ſeveral of our friends who have taken them in their naked hands, and held them long without receiving the leſt injury: It is alſo well known that quacks have eaten them, and have beſides ſqueezed their juices into a glaſs, and drank them with impunity.

We may ſay alſo, that theſe reptiles are a common food to many animals; to *buzzards*, *owls*, *Norfolk plovers*, *ducks*, and *ſnakes*, who would not touch them were they in any degree noxious.

So far from having venomous qualities, they have of late been conſidered as if they had beneficent ones. We wiſh, for the benefit of mankind, that we could make a favorable report of the many attempts of late to cure the moſt terrible of diſeaſes the *cancer*, by the application of live toads; but, alas,

alas, they ſeem only to have rendered a horrible complaint more loathſome.

In a word, we may conſider the toad as an animal that has neither good nor harm in it; that being a defenceleſs creature, nature has furniſhed it, inſtead of arms, with a moſt diſguſting deformity, that ſtrikes into almoſt every Being capable of annoying it, a ſtrong repugnancy to meddle with ſo hideous and threatening an appearance.

Generation. The time of their propagation is very early in the ſpring: at that ſeaſon the females are ſeen crawling about oppreſſed by the males, who continue on them for ſome hours, and adhere ſo faſt as to tear the very ſkin from the Parts they ſtick to. We are uncertain whether they are viviparous: *Linnæus** ſays they are, and diverts us with a report he had heard, that the male acts the midwife to the female in parturition.

To conclude this account with the marvellous, this animal is ſaid to have often been found in the midſt of ſolid rocks, and even in the centre of growing trees, impriſoned in a ſmall hollow, to which there was not the leaſt adit or entrance**: how the animal breathed, or how it ſubſiſted (ſuppoſing the poſſibility of its confinement) is paſt our comprehenſion. *Plot*'s† ſolution of this phænomenon is far from ſatisfactory; yet as we have the great *Bacon*'s‡ authority for the fact, we do not entirely deny our aſſent to it.

* *Syſt. Nat.* 355. ** *Plot's Hiſt. Staff.* 247. † *P.* 249.
‡ *Nat. Hiſt. Cent.* vi. *Exp.* 570.

IV. The

IV. The NATTER JACK.

Rana Rubeta? *Lin. syst.* 355. *Faun. suec. No.* 101. R. corpore verrucoso, ano obtuso subtus punctato. *Ibid.*

THIS species frequents dry and sandy places: it is found on *Putney Common*, and also near *Revesby Abby*, *Lincolnshire*, where it is called the *Natter Jack*. It never leaps, neither does it crawl with the slow pace of a toad, but its motion is liker to running. Several are found commonly together, and, like others of this genus, they appear in the evenings.

The upper part of the body is of a dirty yellow, clouded with brown, and covered with porous pimples of unequal sizes: on the back is a yellow line.

The under side of the body is of a paler hue, marked with black spots, which are rather rough.

On the fore feet are four divided toes; on the hind five, a little webbed.

The length of the body is two inches and a quarter; the breadth, one and a quarter: the length of the fore legs one inch one-sixth; of the hind legs, two inches.

We are indebted to *Joseph Banks*, esq; for this account.

B

BROWN LIZARD. *p. 16.*



SCALY LIZARD.



P. Mazell Del. et Sculp.

Genus III. Slender naked body: four legs: divided toes on each: very long tail. LIZARDS.

I. The SCALY LIZARD.

Lacertus terreſtris lutea ſquamoſa anglica. *Raii ſyn. quad.* 264.

Plot's Hiſt. Staff. 252. *tab.* 22.

Lacerta agilis? L. cauda verticillata longiuſcula ſquamis acutis, collari ſubtus ſquamis conſtructo. *Lin. ſyſt.* 363.

Odla, Fyrfot. *Faun. ſuec. No.* 284.

Lacerta. *Gronov. Zooph. No.* 60.

Little Brown Lizard. *Edw.* 225.

Padzher pou. *Borlaſe Cornwall*, 284. *tab.* 28.

THOSE we have ſeen differ in color, but agree in all other reſpects with the ſpecies deſcribed by Doctor *Plot*. Their length from the noſe to the hind legs was three inches; from thence to the end of the tail three and three quarters.

Along the back was a black liſt; each ſide of that a brown one: then ſucceeded a narrow ſtripe, ſpotted alternately yellow and brown; beneath that a broad black one; thoſe ended a little beyond the hind legs. The belly was yellow, and the ſcales large but even. The ſcales on the back ſmall; on the tail the ends projected: thoſe on the latter were varied with black and brown.

The legs and feet were duſky; on each foot were five toes, furniſhed with claws.

This

This ſpecies is extremely nimble: in hot weather it baſks on the ſides of dry banks, or of old trees; but on being obſerved immediately retreats to its hole.

The food of this ſpecies, as of all the other *Engliſh* lizards, is inſects: they themſelves of birds of prey. Each of our lizards are perfectly harmleſs; yet their form is what ſtrikes one with diſguſt, and has occaſioned great obſcurity in their hiſtory.

Other ſpecies.

Related to this ſpecies is the *Guernſey* lizard, which we are informed has been propagated in *England* from ſome originally brought from that iſland. We have alſo heard of a green lizard frequent near *Farnham*, which probably may be of that kind: but the moſt uncommon ſpecies we ever met with any account of, is that which was killed near *Woſcot*, in the pariſh of *Swinford*, *Worceſterſhire*, in 1741, which was two feet ſix inches long, and four inches in girth. The fore legs were placed eight inches from the head; the hind legs five inches beyond thoſe: the legs two inches long: the feet divided into four toes, each furniſhed with a ſharp claw. Another was killed at *Penbury*, in the ſame county. Whether theſe are not of exotic deſcent, and whether the breed continues, is what we are at preſent uninformed of.

II. The

II. The WARTY LIZARD.

Lacertus aquaticus. *Geſner quad. ovip.* 31.
Salamandra aquatica. *Raii ſyn. quad.* 273.
Lacerta paluſtris. L. cauda lanceolata mediocri, pedibus muticis palmis tetradactylis. *Lin. ſyſt.* 370.
Skrot-abborre, Gruffgrabbe. *Faun. ſuec. No.* 281.
Lacerta Americana. *Seb. Muſ.* I. *tab.* 89. *fig.* 4, 5.
Salamandra alepidota verrucoſa. *Gronov. Zooph. No.* 47.

THE length of this ſpecies was ſix inches and an half, of which the tail was three and a quarter.

The irides yellow: the head and beginning of the back flat, and covered with ſmall pimples or warts, of a dark duſky color; the ſides with white ones: the belly, and the ſide of the tail, was of a bright yellow; the firſt ſpotted with black.

The tail was compreſſed ſideways, and very thin towards the upper edge, and ſlender towards the end.

The fore feet divided into four toes; the hind into five; all without nails, duſky ſpotted with yellow.

Its pace is ſlow and crawling.

This ſpecies we have frequently ſeen in the ſtate we deſcribe, but are uncertain whether we ever met with it under the form of a *larva*. We have more than once found under ſtones and old logs, ſome very minute young lizards that had much the appearance of this kind: they were perfectly formed, and had not the leaſt veſtiges of fins; ſo that circumſtance joined to their being found in a dry place, remote from water, makes us imagine them to have never

never been inhabitants of that element, as it is certain many of our lizards are in their firſt ſtate.

At that period they have a fin above and below their tail; that on the upper part extends along the back as far as the head, but both drop off as ſoon as the animal takes to the land, being then no longer of any uſe.

Beſides theſe circumſtances that attend them in form of a *larve*, Mr. *Ellis** has remarked certain pennated fins at the gills of one very common in moſt of our ſtagnating waters, and which is frequently obſerved to take a bait like a fiſh.

III. The BROWN LIZARD.

Lacertus vulg. terreſtris ventre nigro maculato. *Raii ſyn. quad.* 264.

L. vulgaris. L. cauda tereti mediocri, pedibus unguiculatis, palmis tetradactylis, dorſo linea duplici fuſca. *Lin. ſyſt.* 370. *Faun. ſuec. No.* 283.

THIS is three inches long: the body ſlender; the tail long, ſlightly compreſſed, ſmall and taper; that and the upper part of the body of a pale brown, marked on each ſide the back with a narrow black line reaching to the end of the tail: the belly of a pale yellow, marked with ſmall duſky ſpots; the toes formed like thoſe of the preceding.

* *Phil. Tran. vol.* LVI. *p.* 191.

IV. The

IV. The LITTLE BROWN LIZARD.

Lacertus parvus terreſtris fuſcus oppido rarus. *Raii ſyn. quad.* 264.

THIS ſpecies is mentioned by Mr. *Ray* in his liſt of the *Engliſh* lizards, without any other deſcription than is comprehended in the *ſynonym.*

V. The SNAKE-SHAPED LIZARD.

Lacertus terreſtris anguiformis in ericetis. *Raii ſyn. quad.* 264.

WE remain alſo in the ſame obſcurity in reſpect to this ſpecies. It ſeems to be of that kind which connects the ſerpent and lizard genus, having a long and very ſlender body, and very ſmall legs. Such are the *Seps* or *Lacerta Chalcidica* of *Raii ſyn. quad.* 272, the *Lacerta anguina* of *Linnæus*, 371, or that figured by *Seba, tom.* ii. *tab.* 68. under the name of *Vermis ſerpentiformis.*

Genus IV. Long and ſlender bodies, covered with ſcaly plates: no feet. SERPENT.

I. The VIPER.

*Ἔχις. *Ariſt. Hiſt. an. lib.* iii. *c.* 1.
Vipera. *Virg. Georg.* iii. 417. *Plinii, lib.* x. *c.* 42.
Vipera. *Geſner Serp.* 71.
Viper or Adder. *Raii ſyn. quad.* 285. *Borl. Corn.* 282. *tab.* 28.
Coluber Berus. *Lin. ſyſt.* 377.
Hugg-orm. *Faun. ſuec. No.* 286. C. Berus ſcutis abdom. 146. ſquamis caudæ. 39. *Ibid.*
Amæn. Acad. I. 527.

VIPERS are found in many parts of this iſland, but the dry, ſtony, and, in particular, the chalky countries abound with them.

They are viviparous, not but that they are hatched from an internal egg; being of that claſs of animals, of whoſe generation *Ariſtotle** ſays, Εν αυτοις μέν ωοτοκει τό τέλειον ωόν, ἔξω δε ζωοτοκει, *i. e.* They conceive a perfect egg within, but bring forth their young alive.

Providence is extremely kind in making this ſpecies far from being prolific, we having never heard of more than eleven eggs being found in one viper, and thoſe are as if chained together, and each about the ſize of a blackbird's egg.

The viper grows ſeldom to a greater length than two feet; tho' once we ſaw a female (which is nearly a third larger than the male) which was almoſt three feet long.

Deſcr. The ground-color of this ſerpent is a dirty yellow; that of the female deeper. Its back is marked the whole length with a ſeries of rhomboid black ſpots, touching each other at the points; the ſides with triangular ones; the belly entirely black.

There is a variety wholly black; but the rhomboid marks are very conſpicuous even in this, being of a deeper and more gloſſy hue than the reſt. *Petiver* calls it the *Vipera Anglica Nigricans. Pet. Muſ. No.* 204**.

The head of the viper is inflated, which diſtinguiſhes it from the common ſnake. The tongue

Teeth. forked; the teeth ſmall; the four canine teeth are placed two on each ſide the upper jaw: theſe inſtruments of poiſon are long, crooked, and

* *De Gen. an. lib.* iii. *c.* 2.

** Coluber Preſter. *Linn. Syſt.* 377. Raſc. *Faun. ſuec. No.* 287.

moveable,

moveable, and can be raiſed and depreſſed at pleaſure; they are hollow from near the point to their baſe, near which is a gland that ſecretes, prepares, and lodges the poiſon; and the ſame action that gives the wounds, forces from this gland, thro' the tooth, the fatal juice into it.

Theſe iſlands may be particularly thankful for the bleſſing they enjoy, in being poſſeſſed of only one venomous animal, and that of a kind which encreaſes ſo little.

They copulate in *May*, and are ſuppoſed to be about three months before they bring forth.

They are ſaid not to arrive at their full growth in leſs than ſix or ſeven years; but that they are capable of engendering at two or three.

We have been often aſſured by intelligent people of the truth of a fact mentioned by Sir *Thomas Brown* *, who was far from a credulous writer, that the young of the viper, when terrified, will run down the throat of the parent, and ſeek ſhelter in its belly in the ſame manner as the young of the *oppoſſum* retire into the ventral pouch of the old one.

From this ſome have imagined that the viper is ſo unnatural as to devour its own young; we diſbelieve the fact, it being well known the food of theſe ſerpents is frogs, toads, lizards, mice, and, according to Doctor *Mead*, even an animal ſo large as a mole. Theſe they ſwallow entire; which if we conſider the narrowneſs of their neck, ſhews it is capable of a diſtenſion hardly credible, had we not ocular proofs of the fact. Food.

* *Vulgar errors*, 114.

It is alſo ſaid, from good authority, that they will prey on young birds; whether on ſuch as neſtle on the ground, or whether they climb up trees for them as the *Indian* ſerpents do, we are quite uncertain; but we are well aſſured that this diſcovery is far from a recent one:

Ut aſſidens implumibus pullis avis
Serpentium allapſus timet *.

Thus, for its young the anxious bird
The gliding ſerpent fears.

The viper is capable of ſupporting very long abſtinence, it being known that ſome have been kept in a box ſix months without food, yet did not abate of their vivacity. They feed only a ſmall part of the year, but never during their confinement; for if mice, their favorite diet, ſhould at that time be thrown into their box, tho' they will kill, yet they never will eat them.

The poiſon decreaſes in violence in proportion to the length of their confinement: it muſt be alſo added the virtues of its fleſh (whatſoever they be) are at the ſame time conſiderably leſſened.

Theſe animals, when at liberty, remain torpid throughout the winter; yet when confined have never been obſerved to take their annual repoſe.

The method of catching them is by putting a clift ſtick on or near their head; after which they are ſeized by the tail, and put inſtantly into a bag.

The viper-catchers are very frequently bit by them in the purſuit of their buſineſs, yet we very rarely

* *Hor. Epod.* I.

hear

hear of the bite being fatal. The remedy, if applied in time, is very certain, and is nothing elſe but ſallad oil, which the viper-catchers ſeldom go without. The *axungia viperina*, or the fat of vipers, is alſo another. Doctor *Mead* ſuſpects the efficacy of this laſt, and ſubſtitutes one of his own in its place *; but we had rather truſt to vulgar receipts which perpetual trials have ſhewn to be infallible.

The ſymptoms of the venom, if the wound is neglected, are very terrible: it firſt cauſes an acute pain in the place affected, attended with a ſwelling, firſt red, afterwards livid, which by degrees ſpreads to the neighbouring parts; great faintneſs, and a quick tho' low and interrupted pulſe enſue; great ſickneſs at the ſtomach, bilious convulſive vomitings, cold ſweats, and ſometimes pains about the navel; and in conſequence of theſe death itſelf **. But the violence of the ſymptoms depends much on the ſeaſon of the year, the difference of the climate, the ſize or rage of the animal, or the depth or ſituation of the wound. Effects of its bite.

Dreadful as the effects of its bite may be, yet its fleſh has been long celebrated as a noble medicine. Doctor *Mead* cites from *Pliny*, *Galen*, and other antients, ſeveral proofs of its efficacy in the cure of *ulcers*, the *elephantiaſis*, and other bad complaints. He even ſays he has ſeen good effects from it in an obſtinate *lepra*: it is at preſent uſed as a reſtorative, tho' we think the modern phyſicians have no great dependence on its virtues. The antients preſcribed Uſes.

* *Eſſay on Poiſons*, 47. ** *Lib.* xxix. *c.* 3.

it boiled, and to be eaten as fiſh; for when freſh, the medicine was much more likely to take effect than when dried, and given in form of a powder or troche.

The antient *Britons* had a ſtrange ſuperſtition in reſpect to theſe animals, and of which there ſtill remains in *Wales* a ſtrong tradition. The account *Pliny* gives of it is as follows: we ſhall not attempt a tranſlation, it being already done to our hands in a ſpirited manner by the ingenious Mr. *Maſon*, which we ſhall take the liberty of borrowing.

Præterea eſt ovorum genus in magna Galliarum *fama, omiſſum* Græcis. *Angues innumeri æſtate convoluti, ſalivis faucium corporumque ſpumis artifici complexu glomerantur*; anguinum *appellatur.* Druidæ *ſibilis id dicunt in ſublime jactari, ſagoque oportere intercipi, ne tellurem attingat: profugere raptorem equo: ſerpentes enim inſequi, donec arceantur amnis alicujus interventu**.

But tell me yet
From the grot of charms and ſpells,
Where our matron ſiſter dwells,
Brennus, has thy holy hand
Safely brought the Druid wand,
And the potent *Adder-ſtone*,
Gender'd 'fore the autumnal moon?
When in undulating twine,
The foaming ſnakes prolific join;
When they hiſs, and when they bear
Their wond'rous egg aloof in air;
Thence before to earth it fall,
The *Druid* in his hallow'd pall,
Receives the prize,
And inſtant flies,
Follow'd by the envenom'd brood,
'Till he croſs the cryſtal flood**.

* *Lib.* xxix. *c.* 3.

** *Maſon's Caractacus.* The perſon ſpeaking is a Druid.

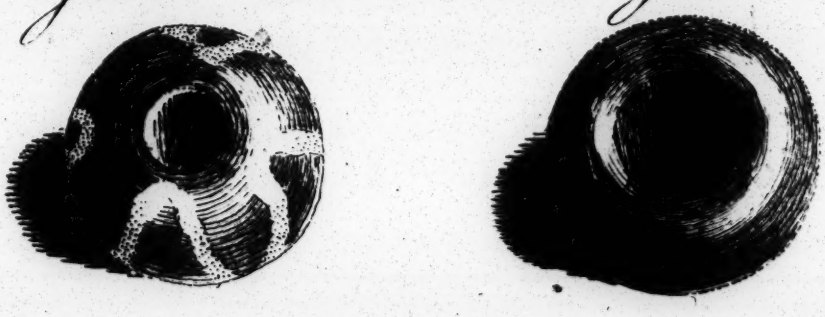
This

This wondrous egg ſeems to be nothing more than a bead of glaſs, uſed by the *Druids* as a charm to impoſe on the vulgar, whom they taught to believe, that the poſſeſſor would be fortunate in all his attempts, and that it would gain him the favor of the great.

Our modern *Druideſſes* give much the ſame account of the *ovum anguinum*, *Glain Neidr*, as the *Welch* call it, or the *Adder-Gem*, as the *Roman* philoſopher does, but ſeem not to have ſo exalted an opinion of its powers, uſing it only to aſſiſt children in cutting their teeth, or to cure the chin-cough, or to drive away an ague.

We have ſome of theſe beads in our cabinet: they are made of glaſs, and of a very rich blue color; ſome are plain, others ſtreaked: we ſay nothing of the figure, as the annexed plate will convey a ſtronger idea of it than words.

Glain Neidr, or Adder Gems.



II. The SNAKE.

Ενυδρίς. *Ariſt. Hiſt. an.* I. *c.* 1.
Natrix torquata. *Geſner. Serpent.* 63.
Natrix torquata. *Raii ſyn. quad.* 334.
Anguis vulgaris fuſcus collo flaveſcente, ventre albis maculis diſtinctus. *Pet. Muſ.* xvii. *No.* 101.
Coluber natrix. *Lin. ſyſt.* 380.
Tomt-Orm, Snok, Ring-Orm. *Faun. ſuec. No.* 288.
C. natrix ſcutis abdom. 170. Squamis caudæ, 60. *Ibid.*

THE ſnake is the largeſt of the *Engliſh* ſerpents, ſometimes exceeding four feet in length: the neck is ſlender; the middle of the body thickeſt; the back and ſides covered with ſmall ſcales, the belly with oblong, narrow, tranſverſe plates. The firſt *Linnæus* diſtinguiſhes by the name of *ſquamæ*, the laſt he calls *ſcuta*, and from them forms his genera of ſerpents.

Thoſe that have both *ſquamæ* and *ſcuta* he calls *Colubri*; thoſe that have only *ſquamæ*, *Angues*. The viper and ſnake are comprehended in the firſt genus, the blind-worm under the ſecond; but we chuſe (to avoid multiplying our genera) to take in the few ſerpents we have by a ſingle genus, their marks being too evident to be confounded.

Deſcr. The color of the back and ſides of the ſnake are duſky or brown; the middle of the back marked with two rows of ſmall black ſpots running from head to tail; and from them are multitudes of lines of ſpots croſſing the ſides; the plates on the belly are duſky, the ſcales on the ſides of a bluiſh white.

On each ſide the neck is a ſpot of pale yellow, and the baſe of each is a triangular black ſpot, one angle of which points towards the tail.

The

The teeth are ſmall and ſerrated, lying each ſide the jaw in two rows.

This ſpecies is perfectly inoffenſive; it frequents and lodges itſelf among buſhes in moiſt places, and will readily take the water, ſwimming very well.

It preys on frogs, inſects, worms, and mice, and, conſidering the ſmallneſs of the neck, it is amazing how large an animal it will ſwallow.

The ſnake is oviparous: it lays its eggs in dung- Eggs.
hills, and in hot-beds, whoſe heat, aided by that of the ſun, promotes the excluſion of the young.

During winter it lies torpid in banks of hedges, and under old trees.

III. The BLIND-WORM.

The blind-worm or ſlow-worm, *Cæcilia Typhline* Græcis. *Raii ſyn. quad.* 289. *Grew's Muſ.* 48.

Cæcilia anglica cinerea ſquamis parvis mollibus, compactis. *Pet. Muſ.* xvii. *No.* 102.

Long cripple. *Borlaſe Cornw.* 284. *tab.* 28.

Anguis fragilis. *Lin. ſyſt.* 392.

Ormſla, Koppar-Orm. *Faun. ſuec.* 289.

A. fragilis ſquamis abdominis caudæque, 135. *Ibid.*

THE uſual length of this ſpecies is eleven inches: Deſcr.
the irides are red; the head ſmall; the neck ſtill more ſlender; from that part the body grows ſuddenly, and continues of an equal bulk to the tail, which ends quite blunt.

The color of the back is cinereous, marked with very ſmall lines compoſed of minute black ſpecks; the ſides are of a reddiſh caſt; the belly duſky, both marked like the back.

The

The tongue is broad and forky; the teeth minute, but numerous; the ſcales ſmall.

The motion of this ſerpent is ſlow, from which, and from the ſmallneſs of the eyes, are derived its names. Like others of the genus, it lies torpid during winter, and are ſometimes found in vaſt numbers twiſted together.

Like the former it is quite innocent. Doctor *Borlaſe* mentions a variety of this ſerpent with a pointed tail; and adds, that he was informed that a man loſt his life by the bite of one in *Oxfordſhire*. We are inclined to think that his informant miſtook the black or duſky viper for this kind; for excepting the viper, we never could learn that there was any ſort of poiſonous ſerpent in theſe kingdoms.

CLASS IV.

FISH.

Oh Deus ampla tuæ, quam ſunt miracula dextræ!
O quam ſolerti ſingula mente regis!
Divite tu gazâ terras, et meſſibus imples;
Nec minus eſt vaſti fertilis unda maris:
Squammiger hunc peragrat populus, proleſque parentum
Stipat, et ingentes turba minuta duces.

JONSTON. PSALMUS CIV.

F I S H.

Div. I. CETACEOUS FISH.

NO gills, an orifice on the top of the head, thro' which they breathe, and eject water; a flat or horizontal tail; exemplified in the explanatory plate, *fig.* 1. by the BEAKED WHALE, borrowed from *Dale's Hiſt. Harw.* 411. *tab.* 14.

GENERA.

I. WHALE. page 35
II. CACHALOT. 44
III. DOLPHIN. 48

Div. II. CARTILAGINOUS FISH

BREATHING thro' certain apertures, generally placed on each ſide the neck, but in ſome inſtances beneath, in ſome above, and from one to ſeven in number on each part, except in the PIPE FISH, which has only one.

The muſcles ſupported by cartilages, inſtead of bones.

Explan. Pl. *fig.* 2. the PICKED DOG FISH.
a. The lateral apertures.

 IV. LAM-

IV. LAMPREY. page 58
V. SKATE. 62
VI. SHARK. 74
VII. FISHING FROG. 93
VIII. STURGEON. 96
IX. SUN FISH. 100
X. LUMP FISH. 103
XI. PIPE FISH. 106

Div. III. BONY FISH.

THIS diviſion includes thoſe whoſe muſcles are ſupported by bones or ſpines, which breathe thro' gills covered or guarded by thin bony plates, open on the ſide, and dilatable by means of a certain row of bones on their lower part each ſeparated by a thin web, which bones are called the *Radii Branchioſtegi*, or the *Gill-covering Rays*.

The tails of all the fiſh that form this diviſion, are placed in a ſituation perpendicular to the body, and this is an invariable character.

The later Icthyologiſts have attempted to make the number of the branchioſtegous rays a character of the *genera*; but I found (yet too late in ſome inſtances, where I yielded an implicit faith) that their rule was very fallible, and had induced me into error; but as I borrowed other definitions, it is to be hoped the explanation of the *genera* will be intelligible. I

ſhould

ſhould be very diſingenuous, if I did not own my obligations in this reſpect to the works of ARTEDI, Dr. GRONOVIUS, and LINNÆUS.

It is from the laſt I have copied the great ſections of the BONY FISH into

APODAL,	JUGULAR,
THORACIC,	ABDOMINAL*.

He founds this ſyſtem on a compariſon of the ventral fins to the feet of land animals or reptiles, and either from the want of them, or their particular ſituation in reſpect to the other fins, eſtabliſhes his ſections.

In order to render them perfectly intelligible, it is neceſſary to refer to thoſe ſeveral organs of movement, and ſome other parts, in a perfect fiſh, or one taken out of the three laſt ſections.

The HADOCK. Expl. Pl. *fig.* 4.

a. The pectoral fins.
b. ventral fins.
c. anal fins.
d. caudal fin, or the tail.
e. e. e. dorſal fins.
f. bony plates that cover the gills.
g. branchioſtegous rays, and their membranes.
h. lateral, or ſide line.

* *Vide Syſt. Nat.* 422.

Sect.

Sect. I. APODAL.

THE moſt imperfect, wanting the ventral fins; illuſtrated by the CONGER, *fig.* 3. This alſo expreſſes the union of the dorſal and anal fins with the tail, as is found in ſome few fiſh.

XII. EEL. page 111
XIII. WOLF FISH. 119
XIV. LAUNCE. 123
XV. MORRIS. 125
XVI. SWORD FISH. 126

Sect. II. JUGULAR.

THE ventral fins *b*, placed before the pectoral fins *a*, as in the HADOCK, *fig.* 4.

XVII. DRAGONET. page 130
XVIII. WEEVER. 134
XIX. CODFISH. 137
XX. BLENNY. 167

Sect. III. THORACIC.

THE ventral fins *a*, placed beneath the pectoral fins *b*, as in the FATHER LASHER, *fig.* 5.

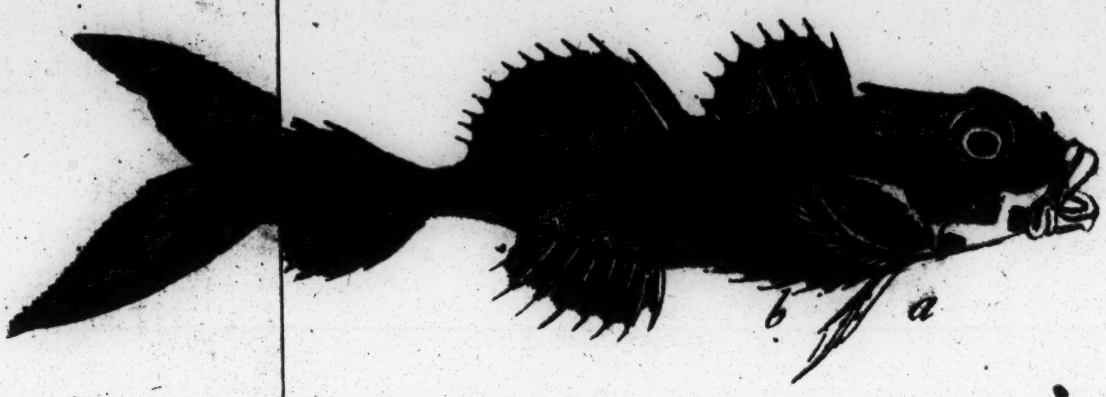
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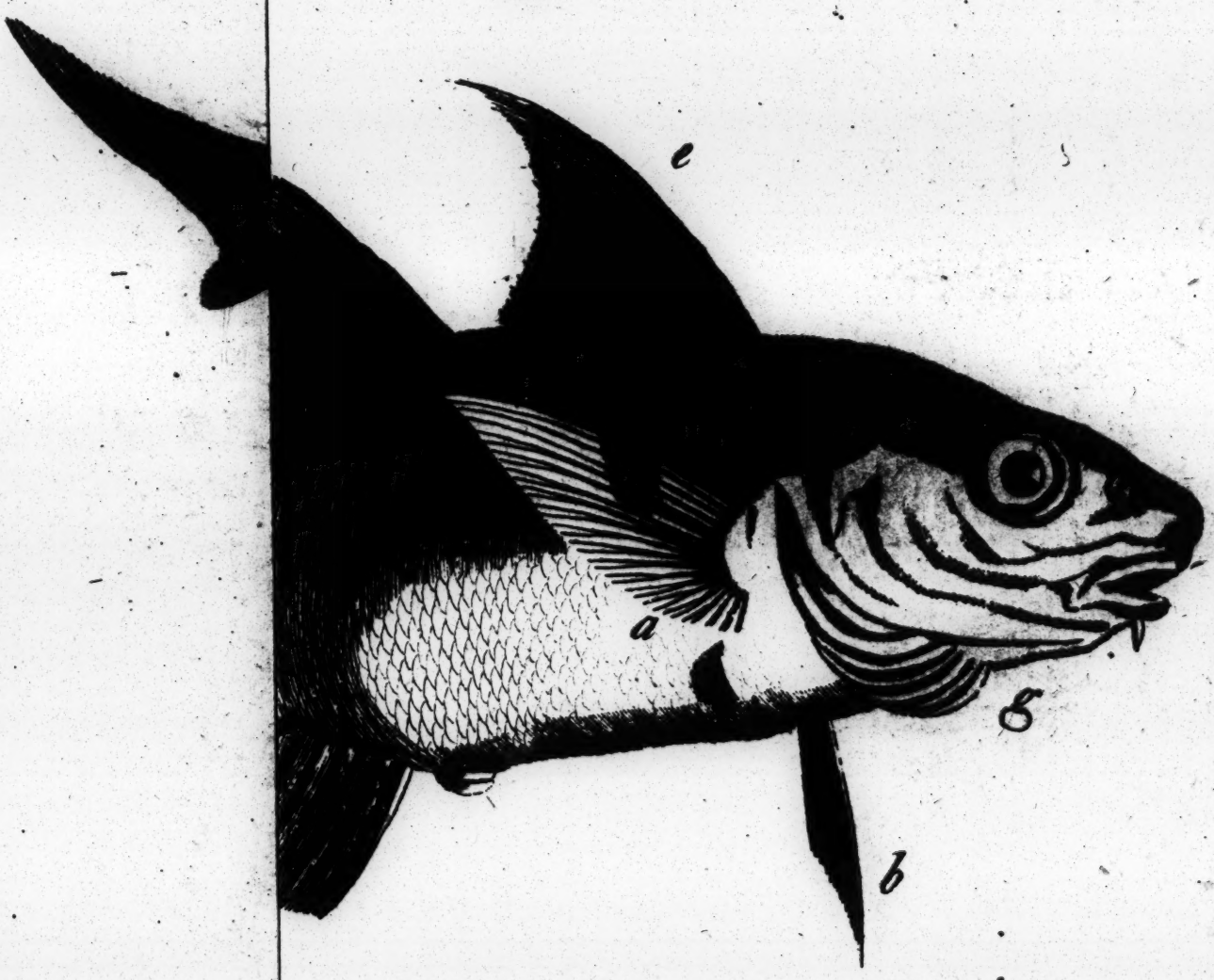
THE ventral fins placed behind the pectoral fins, as in the MINOW, *fig.* 6.

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V



IV



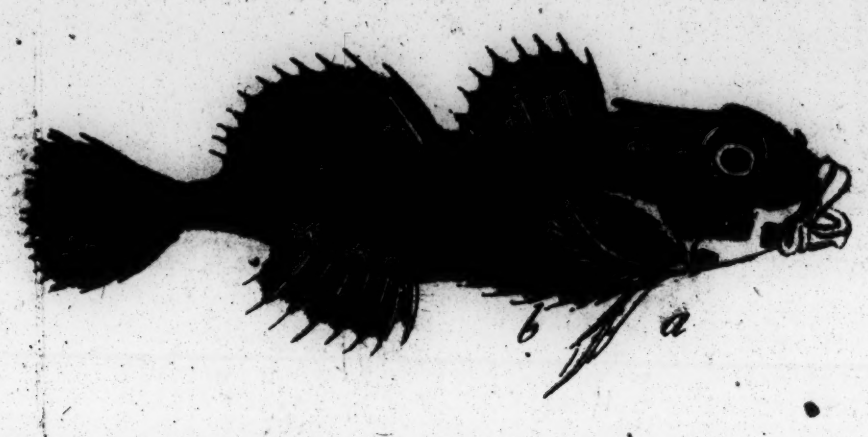
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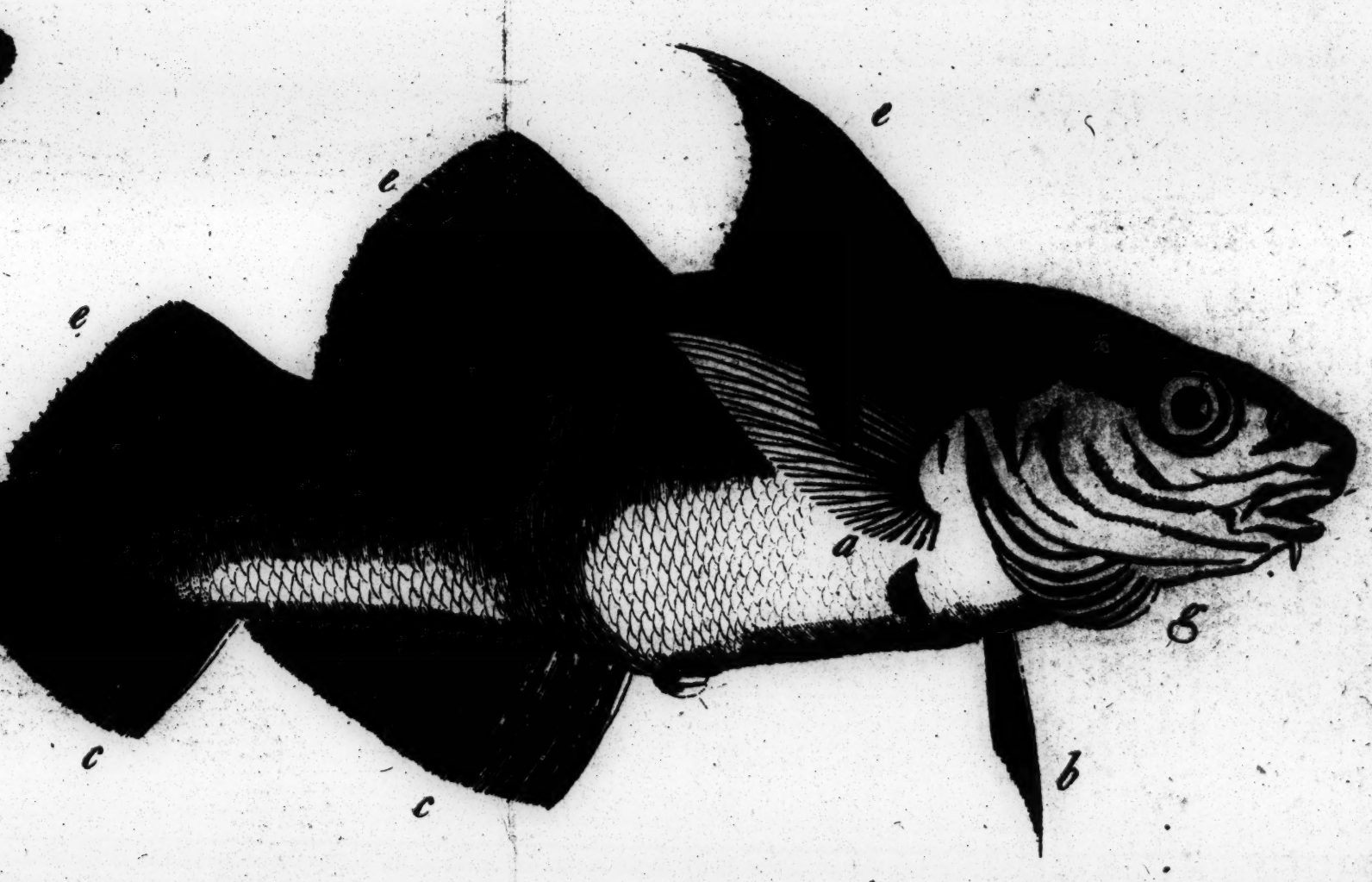

I
II
III
EXPLANATION



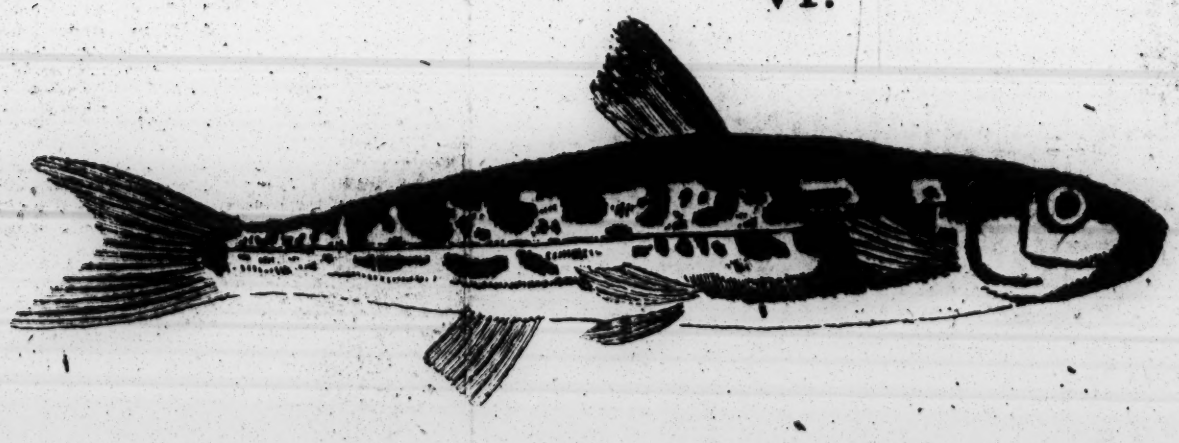
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IV



VI.



B

Div. I. CETACEOUS FISH.

NATURE on this tribe hath beſtowed an internal ſtructure in all reſpects agreeing with that of quadrupeds; and in a few other the external parts in both are ſimilar.

Cetaceous Fiſh, like land animals, breathe by means of lungs, being deſtitute of gills. This obliges them to riſe frequently to the ſurface of the water to reſpire, to ſleep on the ſurface, as well as to perform ſeveral other functions.

They have the power of uttering ſounds, ſuch as bellowing and making other noiſes, a faculty denied to genuine fiſh*.

Like land animals they have warm blood, are furniſhed with organs of generation, copulate, bring forth, and ſuckle their young, ſhewing a ſtrong attachment to them.

Their bodies beneath the ſkin are entirely ſurrounded with a thick layer of fat (blubber) analogous to the lard on hogs.

The number of their fins never exceeds three, *viz.* two pectoral fins, and one back fin; but in ſome ſpecies the laſt is wanting.

Their tails are placed horizontally or flat in reſpect to their bodies; contrary to the direction of thoſe of all other fiſh, which have them in a perpendicular ſite. This ſituation of the tail enables them to force themſelves ſuddenly to the ſurface of the water

* *Pontop. Hiſt. Norw.* ii. 123. *Blaſius Anat. Animal,* 288.

to

to breathe, which they are ſo frequently conſtrained to do.

Many of theſe circumſtances induced *Linnæus* to place this tribe among his *Mammalia*, or what other writers ſtyle quadrupeds.

To have preſerved the chain of beings entire, he ſhould in this caſe have made the genus of *Phocæ*, or *Seals*, and that of the *Trichecus* or *Manati*, immediately precede the whale, thoſe being the links that connect the *Mammalia* or quadrupeds with the fiſh; for the *Seal* is, in reſpect to its legs, the moſt imperfect of the former claſs; and in the *Manati* the hind feet coaleſce, aſſuming the form of a broad horizontal tail.

Notwithſtanding the many parts and properties which cetaceous fiſh have in common with land animals, yet there ſtill remain others, that in a natural arrangement of the animal kingdom, muſt determine us after the example of the illuſtrious *Ray**, to place them in the rank of fiſh; and for the ſame reaſons, that firſt of ſyſtematic writers aſſigns,

That the form of their bodies agrees with that of fiſh.

They are entirely naked, or covered only with a ſmooth ſkin.

They live entirely in the water, and have all the actions of fiſh.

* Who makes two diviſions of fiſh.
1 *Pulmone reſpirantes.*
2 *Branchiis reſpirantes.*

Genus

Genus I. Cetaceous Fiſh without teeth, with horny laminæ in their mouths. WHALE.

I. The COMMON WHALE.

Μυϛίκητος. *Ariſt. Hiſt. an. lib.* iii. *c.* 12.
Muſculus *Plinii lib.* xi. *c.* 37.
Balæna. *Rondel.* 475. *Geſner Piſc.* 114.
Balæna major, laminas corneas in ſuperiore maxillas habens, fiſtula donata, bipinnis. *Sib. Phalæn.* 28.
Balæna vulgaris edentula, dorſo non pinnato. *Raii ſyn. piſc.* 6.
Balæna. *Rondel. Wil. Icth.* 35.
The Whale. *Martens Spitzberg.* 130. *Crantz. Greenl.* 1. 107.
La Baleine ordinaire. *Briſſon Cet.* 218.
Balæna fiſtula in medio capite, dorſo caudam verſus, acuminato. *Arted ſyn.* 106. *Sp.* 106.
Balæna myſticetus. *Lin. ſyſt.* 105. Gronlands Walfiſk. *Faun. ſuec. No.* 49.
Balæna. *Gronov. Zooph.* 29.

THIS ſpecies is the largeſt of all animals: it is even at preſent ſometimes found in the northern ſeas ninety feet in length; but formerly they were taken of a much greater ſize, when the captures were leſs frequent, and the fiſh had time to grow. Such is their bulk within the *arctic* circle, but in thoſe of the *torrid* zone, where they are unmoleſted, whales are ſtill ſeen one hundred and ſixty feet long *. Size.

The head is very much diſproportioned to the ſize of the body, being one-third the ſize of the fiſh: the under lip is much broader than the upper. The tongue is compoſed of a ſoft ſpongy fat, capable of

* *Adanſon's voy.* 174. From this account we find no reaſon to diſbelieve the vaſt ſize of the *Indian* whales, of whoſe bones and jaws, both *Strabo, lib.* xv. and *Pliny, lib.* ix. *c.* 3. relate, that the natives made their houſes, uſing the jaws for door-caſes. This method of building was formerly practiſed by the inhabitants of *Greenland*, as we find from *Frobiſher*, in his ſecond voyage, p. 18, publiſhed in 1578.

yielding

yielding five or six barrels of oil. The gullet is very small for so vast a fish, not exceeding four inches in width. In the middle of the head are two orifices, thro' which it spouts water to a vast height, and with a great noise, especially when disturbed or wounded.

The eyes are no larger than those of an ox.

On the back there is no fin, but on the sides, beneath each eye, are two large ones.

The penis is eight feet in length, inclosed in a strong sheath. The teats in the female are placed in the lower part of the belly.

The tail is broad and semilunar.

This whale varies in color: the back of some being red, the belly generally white. Others are black, some mottled, others quite white, according to the observations of *Marten*, who says, that their colors in the water are extremely beautiful, and that their skin is very smooth and slippery.

Whale-bone. What is called *whalebone* adheres to the upper jaw, and is formed of thin parallel laminæ, some of the longest four yards in length; of these there are commonly 350 on each side, but in very old fish more; of these about 500 are of a length fit for use, the others being too short. They are surrounded with long strong hair, not only that they may not hurt the tongue, but as strainers to prevent the return of their food when they discharge the water out of their mouths.

It is from these hairs that *Aristotle* gave the name of Μυστικητος, or the *bearded whale*, to this species, which he tells us had in its mouth hairs instead of teeth;

teeth *; and *Pliny* deſcribes the ſame under the name of *Muſculus* **. Tho' the antients were acquainted with this animal, yet as far as we recollect, they were ignorant of their uſes as well as capture.

Aldrovand† indeed deſcribes from *Oppian*, what he miſtakes for whale fiſhing: he was deceived by the word κητος, which is uſed not only to expreſs whale in general, but any great fiſh. The *poet* here meant the *ſhark*, and ſhews the way of taking it in the very manner practiſed at preſent, by a ſtrong hook baited with fleſh. He deſcribes too its three-fold row of teeth, a circumſtance that at once diſproves its being a whale:

Δεινας χαυλιοδοντας ἀναιδέας ἠυτ' ἀκοντας,
Τρισοιχεί πεφυωτας ἐπασσυτέρησιν ἀκωκαῖς.
Halieut. v. *lin.* 526.

Whoſe dreadful teeth in triple order ſtand,
Like ſpears out of his mouth.

The whale, tho' ſo bulky an animal, ſwims with vaſt ſwiftneſs, and generally againſt the wind.

It brings only two young at a time, as we believe is the caſe with all other whales.

Its food is a certain ſort of ſmall ſnail, and as *Linnæus* ſays, the *meduſa*, or ſea blubber. Food.

The great reſort of this ſpecies is within the *arctic* circle, but they ſometimes viſit our coaſts. Whether this was the *Britiſh* whale of the antients we cannot pretend to ſay, only we find, from a line in *Juvenal*, that it was of a very large ſize,

* ἔτι δὲ καὶ ὁ μυσίκητος ὀδόντος μεν εν τω στόματι οὐκ ἐχει, τρίχας δε ὁμοίας ψεἰας. *Hiſt. an lib.* iii. c. 12.

** *Lib.* xi. c. 37. † *De Cetis.* 261.

Quanto

Quanto Delphinis Balæna Britannica *major.*

Sat. x.

As much as *Britiſh* whales in ſize ſurpaſs
The dolphin race.

To view theſe animals in a commercial light, we muſt add, that the *Engliſh* were late before they engaged in the whale-fiſhery: it appears by a ſet of queries, propoſed by an honeſt merchant in the year 1575, in order to get information in the buſineſs, that we were at that time totally ignorant of it, being obliged to ſend to *Biſkaie for men ſkilful in the catching of the whale, and ordering of the oil, and one cooper ſkilful to ſet up the ſtaved caſk* *. This ſeems very ſtrange; for by the account *Oſther* gave of his travels to King *Alfred*, near 700 years ** before that period, it is evident that he made that monarch acquainted with the *Norwegians* practiſing the whale-fiſhery; but it ſeems all memory of that gainful employ, as well as of that able voyager *Oſther*, and all his important diſcoveries in the North were loſt for near ſeven centuries.

It was carried on by the *Biſcayeners* long before we attempted the trade, and that for the ſake not only of the oil, but alſo of the whalebone, which they ſeem to have long trafficked in. The earlieſt notice we find of that article in our trade is by *Hackluyt* †, who ſays it was brought from the *Bay of St. Laurence* by an *Engliſh* ſhip that went there for the *barbes* and *fynnes* of whales and train oil, A. D. 1594, and who found there ſeven or eight hundred *whale*

* *Hackluyt's Col. voy.* I. 414. ** *Idem* I. 4.
† *Hackluyt* III. 194.

fynnes

ſynnes, part of the cargo of two great *Biſkaine* ſhips that had been wrecked there three years before. Previous to that, the ladies ſtays muſt have been made of ſplit cane or ſome tough wood, as Mr. *Anderſon* obſerves in his Dictionary of Commerce *, it being certain that the whale fiſhery was carried on, for the ſake of the oil, long before the diſcovery of the uſe of whalebone.

The great reſort of theſe animals was found to be on the inhoſpitable ſhores of *Spitzbergen*, and the *European* ſhips made that place their principal fiſhery, and for numbers of years were very ſucceſsful: the *Engliſh* commenced that buſineſs about the year 1598, and the town of *Hull* had the honor of firſt attempting that profitable branch of trade. At preſent it ſeems to be on the decline, the quantity of fiſh being greatly reduced by the conſtant capture for ſuch a vaſt length of time: ſome recent accounts inform us, that the fiſhers, from a defect of whales, apply themſelves to the ſeal fiſhery, from which animals they extract an oil. This we fear will not be of any long continuance; for theſe ſhy and timid creatures will ſoon be induced to quit thoſe ſhores by being perpetually harraſſed, as the *morſe* or *walrus* has already in a great meaſure done. We are alſo told, that the poor natives of *Greenland* begin even now to ſuffer from the decreaſe of the ſeal in their ſeas, it being their principal ſubſiſtence; ſo that ſhould it totally deſert the coaſt, the whole nation would be in danger of periſhing thro' want.

* *Vol.* I. 442.

Royal Fiſh. In old times the whale ſeems never to have been taken on our coaſts, but when it was accidentally flung aſhore: it was then deemed a royal fiſh*, and the king and queen divided the ſpoil; the king aſſerting his right to the head, her majeſty to the tail **.

II. The PIKE-HEADED WHALE.

Balæna tripinnis nares habens cum roſtro acuto, et plicis in ventre. *Sib. Phalain* 29, *tab.* 1.
Idem. *Raii ſyn. piſc.* 16.
Pike-headed whale. *Dale Harwich*, 410. *No.* 3.
La Baleine a muſeau pointu. *Briſſon Cet.* 224.
Balæna fiſtula duplici in roſtro, dorſo extremo protuberantia cornuiformi. *Arted. ſyn.* 107.
Balæna Boops. *Lin. ſyſt.* 106.

Size. THE length of that taken on the coaſt of *Scotland*, as remarked by Sir *Robert Sibbald*, was forty-ſix feet, and its greateſt circumference twenty.

Deſcr. The head of an oblong form, ſloping down, and growing narrower to the noſe; ſix feet eight inches from the end of which were two ſpout-holes, ſeparated by a thin diviſion: the eyes ſmall.

The pectoral fins five feet long, and one and an half broad; on the back about eight feet and an half from the tail, in lieu of a back fin, was a hard horny protuberance: the tail was nine feet and an half broad.

The belly was uneven, and formed into folds running lengthways.

* Item habet warectum maris per totum regnum *Ballenas* et *Sturgiones* captos, &c. *Edwardi* II. *anno* 17*mo*.
** *Blackſtone's Com.* I. *c.* 4.

The

The ſkin extremely ſmooth and bright; that on the back black; that on the belly white.

This ſpecies takes its name from the ſhape of its noſe, which is narrower and ſharper pointed than that of other whales.

III. The FIN FISH.

Balæna edentula corpore ſtrictiore, dorſo pinnato. *Raii ſyn. piſc.* 9. *Dale Harwich*, 410. *No.* 2.
Fin Fiſh. *Marten's Spitzberg.* 165. *Egede Greenl.* 65. *Crantz Greenl.* I. 110.
Le Gibbar. *Briſſon Cet.* 222.
Balæna fiſtula in medio capite tubero penniformi in extremo dorſo. *Arted. ſyn.* 107.
Balæna Phyſalus. *Lin. ſyſt.* 106.

THIS ſpecies is diſtinguiſhed from the common whale by a fin on the back, placed very low and near the tail.

The length is equal to that of the common kind, but much more ſlender. It is furniſhed with whale-bone in the upper jaw, mixed with hairs, but ſhort and knotty, and of little value. The blubber alſo on the body of this kind is very inconſiderable: theſe circumſtances, added to its extreme fierceneſs and agility, which renders the capture very dangerous, cauſe the fiſhers to neglect it. The natives of *Greenland* tho' hold it in great eſteem, as it affords a quantity of fleſh, which to their palate is very agreeable. Deſcr.

The lips are brown, and like a twiſted rope: the ſpout hole is as it were ſplit in the top of its head, thro' which it blows water with much more violence, and to a greater height, than the common whale.

The fishers are not fond of seeing it, for on its appearance the others retire out of those seas.

Some writers conjecture this species to have been the Φυσαλος, and *Physeter*, or blowing whale of *Oppian*, *Ælian*, and *Pliny* *; but since those writers have not left the least description of it, it is impossible to judge which kind they meant; for in respect to the faculty of spouting out water, or blowing, it is not peculiar to any one species, but common to all the whale kind.

IV. The ROUND-LIPPED WHALE.

Balæna tripinnis maxillam inferiorem rotundam et superiore multo latiorem habens. *Sib. Phalain.* 33. *tab.* T. 3.

Idem. *Raii syn. pisc.* 16.

La Baleine a museau rond. *Brisson Cet.* 222.

B. fistula duplici in fronte maxilla inferiore multo Latiore. *Arted. syn.* 107.

Balæna musculus. *Lin. syst.* 106.

THE character of this species is to have the lower lip broader than the upper, and of a semicircular form.

That taken in 1692 near *Abercorn-Castle*, was seventy-eight feet long, the circumference thirty-five; the *rictus* or gape very wide; the tongue fifteen feet and an half long; the mouth furnished with short whalebone, about three feet in length. On the forehead were two spout holes of a pyramidal form.

The eyes were placed thirteen feet from the end of the nose: the pectoral fins ten feet long: the

* *Oppian, Halieut*, I. *Lin*, 368. *Ælian Hist. an.* ix. *c.* 49. *Plin. lib.* ix. *c.* 5.

back

back fin about three feet high, placed near the tail, which was eighteen feet broad: the belly was full of folds.

This ſpecies is ſaid to feed on herrings.

V. The BEAKED WHALE.

Butſkopf. *Marten's Spitzberg.* 124.
Bottle-head, or flounders-head. *Dale Harwich*, 411. *tab.* 14.
Nebbe-hual, or beaked whale. *Pontop. Norway*, I. 123.

THIS ſpecies was taken near *Maldon*, 1717, and thus deſcribed by *Dale* and *Marten*.

The length was fourteen feet, the circumference ſeven and an half; the body very thick, the forehead high, the noſe depreſſed, and of the ſame thickneſs its whole length, not unlike the beak of a bird: in the mouth were no teeth.

The eyes large, the eyelids ſmall, and placed a little above the line of the mouth. The ſpout hole was on the top of the head ſemicircular, with the corners pointed towards the tail.

The pectoral fins were ſeventeen inches long. The back was placed rather nearer the tail than the head, and was a foot long: the breadth of the tail was three feet two inches.

Theſe fiſh ſometimes grow to the length of twenty feet; they make but little noiſe in blowing, are very tame, come very near the ſhips, and will accompany them for a great way.

Belon deſcribes and figures a fiſh very much reſembling, if not the ſame with this: he ſays it furniſhed

niſhed whalebone, *Dont les Dames font aujourdhuy leurs buſtes, et arrondiſſent leurs verdugades* *, by which it appears, that this commodity was but newly known at that time in *France*. He adds, that the tongue was very good eating, and both that and the fleſh uſed to be ſalted for proviſion.

Genus II. Cetaceous Fiſh, with teeth in the lower jaws only. CACHALOT.

Sp. I. The BLUNT-HEADED CACHALOT.

A Fiſh of this kind was caſt aſhore on *Blyth* ſand, *January* 30, 1762; its length was fifty-four feet, the breadth fourteen: the upper jaw was five feet longer than the lower, whoſe length was ten feet.

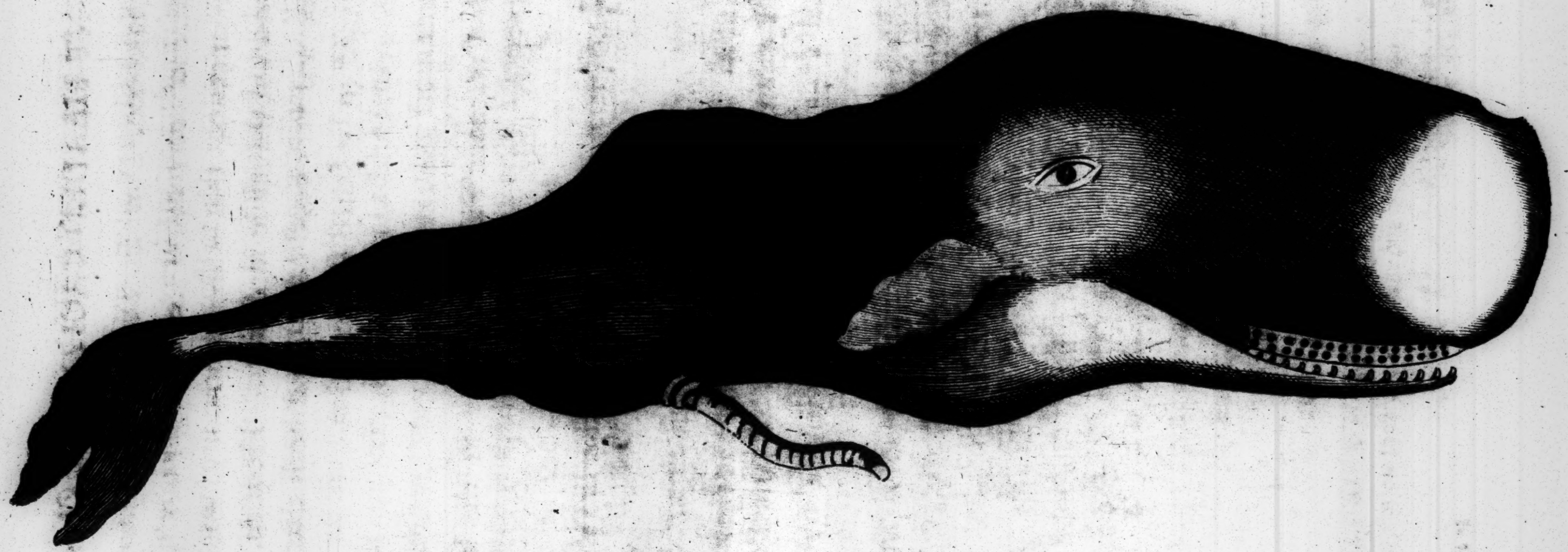
Size.

Deſcr. The head was of a moſt enormous ſize, very thick, and above one-third the ſize of the fiſh: the end of the upper jaw was quite blunt, and near eight feet high: the ſpout hole was placed near the end of it.

Teeth. The teeth were placed in the lower jaw, eighteen on each ſide, all pointing outwards; in the upper jaw oppoſite to them were an equal number of cavities, in which the ends of the teeth lodged when the mouth was cloſed. The teeth, figured in *plate* iii. *No.* 2, was eight inches long, the greateſt circum-

* *Belon de la nat. &c. des Poiſſons*, 1555, p. 6, by which it appears that the *French* were acquainted with that article at leſt forty years before we were.

ference



B L

ference the ſame. It is hollow within ſide for the depth of three inches, and the mouth of the cavity very wide: it is thickeſt at the bottom, and grows very ſmall at the point, bending very much; but in ſome the flexure is more than in others. Theſe, as well as the teeth of all other whales, we have obſerved are very hard, and cut like ivory.

The eyes very ſmall, and remote from the noſe.

The pectoral fins placed near the corners of the mouth: it had no other fin, only a large protuberance on the middle of the back.

The tail a little forked, and fifteen feet from tip to tip.

The penis eight feet long.

The figure *plate* ii. we borrowed from a print taken from the fiſh publiſhed by *William Bingham*; after directing the tail to be placed in a horizontal poſition.

Sperma-ceti.

This is one of the ſpecies which yield what is improperly called *ſperma ceti*, that ſubſtance being found lodged in the head of the fiſh that form this genus, which the *French* call *Cachalot*, a name we have adopted, having no generical term for it in our tongue.

II. The GREAT-HEADED CACHALOT.

Trumpa. *Purchaſs's Pilgrimes* iii. 471.

Balæna major in inferiore tantum maxilla dentata dentibus arcuatis falciformibus, pinnam ſive ſpinam in dorſo habens. *Sib. Phalain.* 13. *tab.* A. 1. *Raii ſyn. piſc.* 15.

Le cachalot a dents en faucilles. *Briſſon Cet.* 229.

The Parmacitty Whale, or Pot Wal fiſh. *Dale Harwich*, 413.

Phyſeter microps. *Lin. ſyſt.* 107. *Arted. ſyn.* 104.

Caſhalot, Catodon, or Pot fiſh. *Crantz Greenl.* I. 112.

ACCORDING to Sir *Robert Sibbald's* obſervations on one taken on the coaſt of *Scotland*, the head was of an oblong form, and of ſuch a bulk as to exceed that of all the reſt of the body.

The end of the upper jaw was five feet longer than that of the lower: a little above the middle of the noſe was placed the ſpout hole, divided in the middle, and covered with a lid.

Teeth. In the lower jaw were forty-two teeth, bent like a ſickle, thick in the middle, and growing ſmaller towards each end: a ſpecimen of a ſmall one is engraved, *plate* iii. *No.* 3.

The eyes were very ſmall, not larger than thoſe of a hadock.

On the middle of the back was a long ſpine, inſtead of a fin.

The color of this fiſh was black, the ſkin of a ſilky appearance, and very thin.

The length of this fiſh was fifty-two feet; above ſeventy gallons of oil were extracted from it, and a great quantity of *ſperma ceti*.

Linnæus informs us, that this ſpecies purſues and terrifies the porpeſſes ſo much, as often to drive them on ſhore.

III. The

III. The ROUND-HEADED CACHALOT.

Balæna minor in inferiore maxilla tantum dentata ſine ſpina aut pinna in dorſo. *Sib. Phalain.* 9. *Raii ſyn. piſc.* 15.

Le petit Cachalot. *Briſſon Cet.* 228.

Phyſeter Catodon. *Lin. ſyſt.* 107.

Catodon fiſtula in roſtro. *Arted. ſynon.* 108.

THIS ſpecies was taken on one of the *Orkney* iſles, a hundred and two of different ſizes being caſt aſhore at one time, the largeſt twenty-four feet in length.

The head was round, the opening of the mouth ſmall: *Sibbald* ſays it had no ſpout hole, but only noſtrils. We rather think, that the former being placed at the extremity of the noſe was miſtaken by him for the latter.

The teeth we have in our cabinet of this ſpecies (*plate* iii. *No.* 4.) are an inch and three quarters long, and in the largeſt part, of the thickneſs of one's thumb. The top is quite flat, and marked with concentric lines; the bottom is more ſlender than the top, and pierced with a ſmall orifice. Teeth.

The back fin was wanting; inſtead was a rough ſpace.

IV. The HIGH-FINNED CACHALOT.

Balæna macrocephala tripinnis, quæ in mandibula inferiore dentes habet minus inflexos et in planum deſinentes. *Sib. Phalain.* 18. *Raii ſyn, piſc.* 16.

Le Cachalot a dents plattes. *Briſſon. Cet.* 230.

ONE of this ſpecies was caſt on the *Orkney* iſles in 1687. The ſpout hole was placed in front, and on the middle of the back was a high fin,

fin, which *Sibbald* compares to the mizen maſt of a ſhip. The head abounded with *ſperma ceti* of the beſt ſort.

Teeth. The teeth of this kind are very ſlightly bent; that which we have figured, *plate* iii. *No.* 1. is ſeven inches three quarters in length; the greateſt circumference nine: it is much compreſſed on the ſides; the point rather blunt than flat; the bottom thin, having a very narrow but long orifice, or ſlit, hollowed to the depth of five inches and a quarter, and the tooth was immerſed in the jaw as far as that hollow.

Genus III. Cetaceous Fiſh, with teeth in both jaws. DOLPHIN.

Sp. 1. The DOLPHIN.

Δελφίς. *Ariſt. Hiſt. an. lib.* vi. *c.* 12. Δελφίν. *Ælian. lib.* I. *c.* 18.
Delphinus *Plinii, lib.* ix. *c.* 8. Le Daulphin, ou oye de mor. *Belon Poiſſ.* 7.
Delphinus. *Rondel.* 459. *Geſner piſc.* 319. *Caii opuſc.* 113.
Delphinus Antiquorum. *Wil. Icth.* 28. *Raii ſyn. piſc.* 12.
Delphinus corpore longo ſubtereti, roſtro longo acuto. *Arted. ſyn.* 105.
Le Dauphin. *Briſſon Cet.* 233.
Delphinus Delphis. *Lin. ſyſt.* 108.
Dolphin. *Borlaſe Cornwall,* 264. *tab.* 27. *Crantz Greenl.* I, 115.

HISTORIANS and philoſophers ſeem to have contended who ſhould invent moſt fables concerning this fiſh. It was conſecrated to the Gods, was celebrated in the earlieſt time for its fondneſs of the human race, was honored with the title of the

Sacred

Sacred Fiſh *, and diſtinguiſhed by thoſe of *Boy-loving*, and *Philanthropiſt*. It gave riſe to a long train of inventions, proofs of the credulity and ignorance of the times.

Ariſtotle ſteers the cleareſt of all the antients from theſe fables, and gives in general ſo faithful a natural hiſtory of this animal, as evinces the ſuperior judgment of that great philoſopher, in compariſon of thoſe who ſucceeded him. But the elder *Pliny*, *Ælian*, and others, ſeem to preſerve no bounds in their belief of the tales related of this fiſh's attachment to mankind.

Pliny ** the younger, (apologizing for what he is going to ſay) tells the ſtory of the enamoured dolphin of *Hippo* in a moſt beautiful manner. It is too long to be tranſcribed, and would be injured by an abridgement; therefore we refer the reader to the original, or to Mr. *Melmouth*'s elegant tranſlation.

Scarce an accident could happen at ſea but the dolphin offered himſelf to convey to ſhore the unfortunate. *Arion*, the muſician, when flung into the ocean by the pyrates, is received and ſaved by this benevolent fiſh.

Inde (fide majus) tergo Delphina recurvo,
Se memorant oneri ſuppoſuiſſe novo.
Ille ſedens citharamque tenens, pretiumque vehendi
Cantat, et æquoreas carmine mulcet aquas.
Ovid. Faſti. lib. ii. 113.

But (paſt belief) a dolphin's arched back,
Preſerved *Arion* from his deſtined wrack;
Secure he ſits, and with harmonious ſtrains,
Requites his bearer for his friendly pains.

* *Athenæus*, 281. ** *Epiſt. lib.* ix. *ep.* 33.

We

We are at a loſs to account for the origin of thoſe fables, ſince it does not appear that the dolphin ſhews a greater attachment to mankind than the reſt of the cetaceous tribe. We know that at preſent the appearance of this fiſh, and the porpeſſe, are far from being eſteemed favorable omens by the ſeamen; for their boundings, ſprings and frolics in the water, are held to be ſure ſigns of an approaching gale.

It is from their leaps out of that element that they aſſume a temporary form that is not natural to them, but which the old painters and ſculptors have almoſt always given them. A dolphin is ſcarce ever exhibited by the antients in a ſtrait ſhape, but almoſt always incurvated: ſuch are thoſe on the coin of *Alexander the Great*, which is preſerved by *Belon*, as well as on ſeveral other pieces of antiquity. The poets deſcribe them much in the ſame manner, and it is not improbable but that the one had borrowed from the other:

Tumidumque pando tranſilit dorſo mare
Tyrrhenus omni piſcis exſultat freto,
Agitatque gyros. *Senec. Trag. Agam.* 450.

Upon the ſwelling waves the dolphins ſhew
Their bended backs, then ſwiftly darting go,
And in a thouſand wreaths their bodies throw.

Deſcr. The natural ſhape of the dolphin is almoſt ſtrait, the back being very ſlightly incurvated, and the body ſlender: the noſe is long, narrow, and pointed, not much unlike the beak of ſome birds, for which reaſon the *French* call it *L' oye de mer*.

Teeth. It has in all forty-two teeth, twenty-one in the upper jaws, and nineteen in the lower, a little above

an

1.
p. 48.



3.
p. 46.



5
p. 50.



2
p. 44.



4
p. 47.



P. Mazell del. et lith.

BL

an inch long, conic at their upper end, ſharp pointed*, bending a little in. They are placed at ſmall diſtances from each other, ſo that when the mouth is ſhut, the teeth of both jaws lock into one another: a ſingle one is figured *plate* iii. *No.* 5.

The ſpout hole is placed in the middle of the head.

The back fin is high, triangular, and placed rather nearer to the tail than to the head; the pectoral fins ſituated low.

The tail is ſemilunar.

The ſkin is ſmooth, the color of the back and ſides duſky; the belly whitiſh.

It ſwims with great ſwiftneſs: its prey is fiſh.

It was formerly reckoned a great delicacy: Doctor *Caius* ſays, that one which was taken in his time, was thought a preſent worthy the Duke of *Norfolk*, who diſtributed part of it among his friends. It was roaſted and dreſſed with porpeſſe ſauce, made of crumbs of fine white bread, mixed with vinegar and ſugar.

This ſpecies of dolphin muſt not be confounded with that to which ſeamen gives the name, the latter being quite another kind of fiſh, the *Coryphæna, Hippuris* of *Linnæus*, *p.* 446. and the *Dorado* of the *Portugueſe*, deſcribed by *Willoughby*, *p.* 213.

* *Plate* iii. *fig.* 5.

II. The

II. The PORPESSE.

Φώκαινα. *Ariſt. Hiſt. an. lib.* vi. *c.* 12.
Turſio *Plinii. lib.* ix. *c.* 9.
Le Marſouin. *Belon.*
Turſio. *Rondel.* 474. *Geſner piſc.* 711.
Porpeſſe. *Wil. Icth.* 31. *Raii ſyn. piſc.* 13. *Crantz Greenl.* I, 114. *Kolben's Hiſt. Cape,* II. 200.
Le Marſouin. *Briſſon Cet.* 234.
Delphinus corpore fere coniformi, dorſo lato, roſtro ſubacuto. *Arted. ſynon.* 104.
Delphinus Phocæna. *Lin. ſyſt.* 108.
Marſwin, Tumblare. *Faun. ſuec. No.* 51.

THESE fiſh are found in vaſt multitudes in all parts of the ſea that waſh theſe iſlands, but in greateſt numbers at the time when fiſh of paſſage appear, ſuch as mackrel, herrings, and ſalmon, which they purſue up the bays with the ſame eagerneſs as a pack of dogs does a hare. In ſome places they almoſt darken the ſea as they riſe above water to take breath: but porpeſſes not only ſeek for prey near the ſurface, but often deſcend to the bottom in ſearch of ſand eels, and ſea worms, which they root out of the ſand with their noſes in the ſame manner as hogs do in the fields for their food.

Deſcr. Their bodies are very thick towards the head, but grows ſlender towards the tail, forming the figure of a cone.

The noſe projects a little, is much ſhorter than that of the dolphin, and is furniſhed with very ſtrong muſcles, which enables it the readier to turn up the ſand.

Teeth. In each jaw are forty-eight teeth, ſmall, ſharp pointed, and a little moveable: like thoſe of the dolphin,

phin, they are ſo placed as that the teeth of one jaw locks into thoſe of the other when cloſed.

The tongue is flat, pectinated at the edges, and faſtened down to the bottom of the mouth.

The eyes ſmall; the ſpout hole on the top of the the head.

On the back is one fin placed rather below the middle; on the breaſt are two fins. The tail ſemilunar.

The color of the porpeſſe is generally black, and the belly whitiſh, not but they ſometimes vary; for in the river *St. Laurence* there is a white kind; and Doctor *Borlaſe*, in his voyage to the *Scilly* iſles, obſerved a ſmall ſpecies of cetaceous fiſh, which he calls *thornbacks*, from their broad and ſharp fin on the back, ſome of theſe were brown, ſome quite white, others ſpotted: but whether they were only a variety of this fiſh, or whether they were ſmall *grampuſes*, which are alſo ſpotted, we cannot determine.

The porpeſſe is remarkable for the vaſt quantity of the fat or lard that ſurrounds the body, which yields a great quantity of excellent oil: from this lard, or from their rooting like ſwine, they are called in many places *ſea hogs*; the *Germans* call them *meerſchwein*; the *Swedes*, *marſuin*; and the *Engliſh*, *porpeſſe*, from the *Italian*, *porco peſce*. Fat.

III. The

III. The GRAMPUS.

Orca *Plinii, lib.* ix. *c.* 6.
L'oudre ou grand marſouin. *Belon*, 13.
Orca. *Rondel.* 483. *Geſner piſc.* 635. Leper, Springer. *Schonevelde*, 53.
Butſkopf. *Marten's Spitzberg.* 124.
Balæna minor utraque maxilla dentata. *Sib. Phalæn.* 7, 8. *Wil. Icth.* 40. *Raii ſyn. piſc.* 15.
L. Epaulard. *Briſſon Cet.* 236.
Delphinus orca. *Lin. ſyſt.* 108.
Lopare, Delphinus roſtro ſurſum repando, dentibus latis ſerratis. *Arted. ſyn.* 106.

THIS ſpecies is found from the length of fifteen feet to that of twenty-five. It is remarkably thick in proportion to its length, one of eighteen feet being in the thickeſt place ten feet diameter. With reaſon then did *Pliny* call this an immenſe heap of fleſh, armed with dreadful teeth *.

It is extremely voracious, and will not even ſpare the porpeſſe, a congenerous fiſh. It is ſaid to be a great enemy to the whale, and that it will faſten on it like a dog on a bull, till the animal roars with pain.

Teeth. The noſe is flat, and turns up at the end. There are thirty teeth in each jaw; thoſe before are blunt, round, and ſlender; the fartheſt ſharp and thick: between each is a ſpace adapted to receive the teeth of the oppoſite jaw when the mouth is cloſed.

The ſpout hole is in the top of the neck. In reſpect to the number and ſite of the fins, it agrees with the dolphin.

* Cujus imago nulla repreſentatione exprimi poſſit alia, quam carnis immenſæ dentibus truculentis. *Lib.* ix. *c.* 6.

The

The color of the back is black, but on each ſhoulder is a large white ſpot, the ſides marbled with black and white, the belly of a ſnowy whiteneſs. Color.

Theſe ſometimes appear on our coaſts, but are found in much greater numbers off the *North Cape* in *Norway*, whence they are called *North Capers*. Theſe and all other whales are obſerved to ſwim againſt the wind, and to be much diſturbed, and tumble about with unuſual violence at the approach of a ſtorm. Place.

Linnæus and *Artedi* ſay, that this ſpecies is furniſhed with broad ſerrated teeth, which as far as we have obſerved, is peculiar to the *ſhark* tribe. We therefore ſuſpect that thoſe naturaliſts have had recourſe to *Rondeletius*, and copied his erroneous account of the teeth: Sir *Robert Sibbald*, who had opportunity of examining and figuring the teeth of this fiſh, and from whom we take that part of our deſcription, giving a very different account of them.

It will be but juſtice to ſay, that no one of our countrymen ever did ſo much towards forming a general natural hiſtory of this kingdom as Sir *Robert Sibbald*: he ſketched out a fine outline of the Zoology of *Scotland*, which comprehends the greateſt part of the *Engliſh* animals, and, we are told, had actually filled up a conſiderable part of it: he publiſhed a particular hiſtory of the county of *Fife*, and has left us a moſt excellent hiſtory of the whales which frequent the coaſt of *Scotland*. We acknowledge ourſelves much indebted to him for information in reſpect to many of thoſe

fiſh, few of which frequent the ſouthern ſeas of thoſe kingdoms, and thoſe that are accidentally caſt aſhore on our coaſts, are generally cut up by the country people, before an opportunity can be had of examining them.

Div. II. CARTILAGINOUS FISH.

THIS title is given to all fiſh whoſe muſcles are ſupported by cartilages inſtead of bones, and comprehends the ſame genera of fiſh to which *Linnæus* has given the name of *amphibia nantes*: but the word *amphibia*, ought properly to be confined to ſuch animals who inhabit both elements, and can live without any inconvenience for a conſiderable ſpace, either on land or under water. This definition therefore excludes all that form this diviſion.

Many of the cartilaginous fiſh are viviparous, being excluded from an egg, which is hatched within them. The egg conſiſts of a white and a yolk, and is lodged in a caſe, formed of a thick tough ſubſtance, not unlike ſoftened horn: ſuch are the eggs of the Ray and Shark kinds.

Some again differ in this reſpect, and are ovipa-rous; ſuch is the Sturgeon, and others.

They breathe either thro' certain apertures beneath, as in the Rays; on their ſides as in the Sharks, &c. or on the top of the head, as in the Pipe-fiſh; for they have not covers to their gills like the bony fiſh.

Genus IV. Slender Eel-shaped body;
Seven apertures on each side;
One on the top of the head.
No pectoral or ventral fins. LAMPREY.

Sp. I. The LAMPREY.

La Lamproye de mer. *Belon.* 66.
Lampetra. *Rondel.* 398.
Lampreda. *Gesner. Paralip.* 22. *pisc.* 590.
Lamprey, or Lamprey Eel. *Wil. Icth.* 105.
Lampetra. *Raii syn. pisc.* 35.
Petromyzon maculosus ordinibus dentium circiter viginti. *Arted. synon.* 90.
Petromyzon marinus. P. ore intus papilloso, pinna dorsali posteriori a cauda distincta. *Lin. syst.* 394. *Faun. suec. No.* 292.

Place. LAMPREYS are found at certain seasons of the year in several of our rivers, but the *Severn* is the most noted for them*. They are sea fish, but like salmon, quit the salt waters, and ascend the latter end of the winter, or beginning of spring, and after a stay of a few months return again to the ocean, a very few excepted. The best season for them is the months of *March*, *April*, and *May*; for they are more firm when just arrived out of the salt water than they are afterwards, being observed to be much wasted, and very flabby at the approach of hot weather.

They are taken in the nets along with salmon and shad, and sometimes in weels laid in the bottom of the river.

* They are also found in the most considerable of the *Scotch* and *Irish* rivers.

It

It has been an old cuſtom for the city of *Glouceſter*, annually, to preſent his majeſty with a *lamprey* pye, covered with a large raiſed cruſt. As the gift is made at *Chriſtmas*, it is with great difficulty the corporation can procure any freſh lampreys at that time, tho' they give guinea a-piece for them, ſo early in the ſeaſon.

They are reckoned a great delicacy, either when potted or ſtewed, but are a ſurfeiting food, as one of our monarchs fatally experienced, *Henry* the Firſt's death being occaſioned by a too plentiful meal of theſe fiſh.

Lampreys are ſometimes found ſo large as to weigh four or five pounds.

The mouth is round and placed rather obliquely below the end of the noſe: the edges are jagged, which enables them to adhere the more ſtrongly to the ſtones, as their cuſtom is, and which they do ſo firmly as not to be drawn off without ſome difficulty.

We have heard of one weighing three pounds, which was taken out of the *Eſk*, adhering to a ſtone of twelve pounds weight, ſuſpended at its mouth, from which it was forced with no ſmall pains.

There are in the mouth twenty rows of ſmall teeth, diſpoſed in circular orders, and placed far within.

The color is duſky, irregularly marked with dirty yellow, which gives the fiſh a diſagreeable look.

We believe that the antients were unacquainted with this fiſh; ſo far is certain, that which Doctor *Arbuthnot*, and other learned men, render the word *lamprey*, is a ſpecies unknown in our ſeas, being the Not the Muræna

muræna of *Ovid*, *Pliny*, and others, for which we want an *Engliſh* name.

The words *Lampetra* and *Petromyzon*, are but of modern date, invented from the nature of the fiſh; the firſt a *Lambendo petras*, the other from Πέτρος, and Μυσαω, becauſe they are ſuppoſed to lick, or ſuck the rocks.

II. The LESSER LAMPREY.

La Lamproye d'eaue dóulce. *Belon.* 67.
Lampredæ alterum genus. *Geſner piſc.* 597.
Lampetra medium genus. *Wil. Icth.* 106. *Raii ſyn. piſc.* 35.
Neunaugen. *Kram.* 282.
Petromyzon fluviatilis. *Lin. ſyſt.* 394.
Nein-oga, natting. *Faun. ſuec. No.* 290. Petromyzon pinna dorſali poſteriori angulata. *Ibid.*
Gronov. Zooph. No. 159.

Deſcr. THIS ſpecies ſometimes grows to the length of ten inches.

The mouth is formed like that of the preceding. On the upper part is a large bifurcated tooth; on each ſide are three rows of very minute ones: on the lower part are ſeven teeth, the exterior of which on each ſide is the largeſt.

The irides are yellow. As in all the other ſpecies between the eyes, on the top of the head, is a ſmall orifice of great uſe to clear its mouth of the water that remains on adhering to the ſtones, for thro' that orifice it ejects the water in the ſame manner as cetaceous fiſh.

On the lower part of the back is a narrow fin, beneath that riſes another, which at the beginning is high

high and angular, then grows narrow, ſurrounds the tail, and ends near the anus.

The color of the back is brown or duſky, and ſometimes mixed with blue; the whole under-ſide ſilvery. Theſe are found in the *Thames*, *Severn*, and *Dee*, are potted with the larger kind, and are by ſome preferred to it, as being milder taſted. Vaſt quantiti esare taken about *Mortlake*, and ſold to the *Dutch* for bait for their turbot and cod fiſhery. Color.

III. The PRIDE.

Une Civelle, un Lamproyon. *Belon.* 67.
Lampetra parve et fluviatilis. *Rondel. piſc. fl.* 202.
Lampreda minima. *Geſner piſc.* 598.
Pride. *Plot. Oxf.* 182. *plate* x.
Lampern, or Pride of the *Iſis*. *Wil Icth.* 104. *Raii ſyn. piſc.* 35.
Petromyzon branchialis. *Lin. ſyſt.* 394.
Lin-ahl. *Faun. ſuec. No.* 291.
Petromyzon pinna dorſali poſteriori lineari, labio oris latere poſtico lobato. *Ibid.*
Uhlen. *Kram.* 384.
Gronov. Zooph. No. 160.

WE have ſeen theſe of the length of eight inches, and about the thickneſs of a ſwan's quil, but they are generally much ſmaller.

They are frequent in the rivers near *Oxford*, particularly the *Iſis*, but not peculiar to that county, being found in others of the *Engliſh* rivers, where, inſtead of concealing themſelves under the ſtones, they lodge themſelves in the mud, and never are obſerved to adhere to any thing like other lampreys.

The body is marked with numbers of tranſverſe lines, that paſs croſs the ſides from the back to the bottom of the belly, which is divided from the mouth to the anus by a ſtrait line.

The back fin is not angular like that of the former, but of an equal breadth, The tail is lanceolated, and sharp at the end.

Genus V. Body broad, flat, and thin.
Five apertures on each side placed beneath:
Mouth situated quite below. RAY.

* With sharp teeth.

I. The SKATE.

Βατὶς ? *Arist. Hist. an. lib.* I. *c.* 5. *lib.* vi. *c.* 10. *Oppian Halieut.* I. 103.
Raia undulata sive cinerea. *Rondel.* 346. *Gesner pisc.* 791.
The Skate, or Flaire. *Wil. Icth.* 69. *Raii syn. pisc.* 25.
Raia Batis. *Lin. syst.* 395.
Raia varia, dorso medio glabro, unico aculeorum ordine in cauda. *Arted. synon.* 102.
Gronov. Zooph. No. 157.

Size. THIS species is the thinnest in proportion to its bulk of any of the genus, and also the largest, some weighing near two hundred pounds.

Descr. The nose, tho' not long, is sharp pointed; above the eyes is a set of short spines: the whole upper part of that we examined was of a pale brown. Mr. *Ray* says, some he saw were streaked with black: the lower part is white, marked with great numbers of minute black spots. The jaws were covered with small granulated but sharp-pointed teeth.

The

The tail is of a moderate length: near the end are two fins: along the top of it is one row of ſpines, and on the edges are irregularly diſperſed a few others, which makes us imagine with Mr. *Ray*, that in this reſpect theſe fiſh vary, ſome having one, others more orders of ſpines on the tail.

It is remarked that in the males of this ſpecies the fins are full of ſpines.

Skates generate in *March* and *April*, at which time they ſwim near the ſurface of the water, ſeveral of the males purſuing one female. They adhere ſo faſt together in coition, that the fiſhermen frequently draw up both together, tho' only one has taken the bait. The females begin to caſt their *purſes*, as the fiſhermen call them (the bags in which the young are included) in *May*, and continue doing it till *September*. In *October* they are exceedingly poor and thin; but in *November* they begin to improve, and grow gradually better till *May*, when they are in the higheſt perfection. The males go ſooner out of ſeaſon than the females. Generation.

II. The

II. The SHARP-NOSED RAY.

Bos? *Ariſt. Hiſt. an. lib.* v. *c.* 5. *Oppian Halieut.* ii. 141.
Bos *ovidii?* 94. *Plinii lib.* ix. *c.* 24.
Raia oxyrhinchus. *Rondel.* 347. *Geſner piſc.* 792. *Wil. Icth.* 71. *Raii ſyn. piſc.* 26.
Raia oxyrinchus. *Lin. ſyſt.* 395.
Raia varia tuberculis decem aculeatis in medis dorſo. *Arted. ſynon.* 101.

Size. IN fiſhing in the *Menai* (the ſtrait that divides *Angleſea* from *Caernarvonſhire*) *July* 1768, we took one of this ſpecies whoſe length was near ſeven feet, and breadth five feet two inches; when juſt brought on ſhore, it made a remarkable ſnorting noiſe.

The noſe was very long, narrow, and ſharp-pointed, not unlike the end of a ſpontoon.

The body was ſmooth, and very thin in proportion to the ſize; the upper part aſh-colored, ſpotted with numerous white ſpots, and a few black ones.

The tail was thick; towards the end were two ſmall fins, on each ſide was a row of ſmall ſpines, with another row in the middle, which run ſome way up the back.

The lower part of the fiſh was quite white.

The mouth very large, and furniſhed with numbers of ſmall ſharp teeth bending inwards.

On its body we found the *hirudo muricata*, which adhered very ſtrongly, and when taken off left a black impreſſion.

This fiſh has been ſuppoſed to be the *Bos* of the antients, which was certainly ſome enormous ſpecies of

of *Ray*, tho' we cannot pretend to determine the particular kind: *Oppian* ſtyles it,

Ευρυτατ☞ παντεσσι μετ' ἰχζυσιν.

Broadeſt among fiſhes.

He adds an account of its fondneſs of human fleſh, and the method it takes of deſtroying men, by over-laying and keeping them down by its vaſt weight till they are drowned. *Phile* gives much the ſame relation*. We are inclined to afford them credit, ſince a modern writer**, of undoubted authority, gives the very ſame account of a fiſh found in the *South Seas*, the terror of thoſe employed in the pearl fiſhery. It is a ſpecies of *ray*, called there *Manta*, or the *Quilt*, from its ſurrounding and wrapping up the unhappy divers till they are ſuffocated; to guard againſt which, the negroes never go down without a ſharp knife to defend themſelves againſt the aſſaults of this terrible enemy.

* *De propriet. Anim.* 85.
** *Ulloa's voy.* I. 132. 8*vo. edit.*

III. The ROUGH RAY.

Raia fullonica. *Rondel.* 357. *Geſner piſc.* 797.
Raia aſpera noſtras, the white horſe. *Wil. Icth.* 78. *Raii ſyn. piſc.* 26.
Raia fullonica. *Lin. ſyſt.*
Raia dorſo toto aculeato, aculeorum ordine ſimplici ad oculos, duplici in canda. *Arted. ſyn.* 101. *Gronov. Zooph. No.* 155.

THIS ſpecies derives its *Latin* name from the inſtruments fullers make uſe of in ſmoothing cloth, the back being rough, with ſmall ſpines like that.

Theſe ſpines are ſpread not only over the back, but the upper ſide of the fins and the head: near each eye is a ſemicircular order of larger ſpines, and about the noſe are a few others; a row of the ſame kind go half way down the back: the tail is armed with a double row of ſtill greater ſpines.

The color of the upper part is aſh-color, mixed with yellow; the lower part of the body entirely white.

This ſpecies we believe to be rare, having never met with it; therefore are obliged to borrow our deſcription from Mr. *Willoughby*.

IV. The CRAMP RAY.

Ναρκη. *Ariſt. Hiſt. an. lib.* v. *c.* 5. ix. *c.* 37. *Oppian Halieut.* I. 104. ii. 56. iii. 149.
Torpedo. *Plinii lib.* ix. *c.* 42.
La Tremble ou Torpille. *Belon.* 78, 81.
Torpedo. *Rondel. Geſner piſc.* Torpedo. Cramp Fiſh. *Wil. Ixth.* 81. *Raii ſyn. piſc.* 28. *Smith's Hiſt. Waterford,* 271.
Raia Torpedo. *Lin. ſyſt.* 395.
Raia tota lævis. *Arted. ſynon.* 102. *Gronov. Zooph. No.* 153. *tab.* 9.

THE narcotic or numbing quality of this fiſh has been taken notice of in all ages: it is ſo powerful when the fiſh is alive, as inſtantly to deprive the perſon who touches it of the uſe of his arm, and even to affect him if he touches it with a ſtick. *Oppian* goes ſo far as to ſay, that it will benumb the aſtoniſhed fiſherman, even thro' the whole length of line and rod.

Ναὶ μὲν κι ΝΑΡΚΕ σφέτερον νόον ὐκ απολείπει,
Πληγῆ ἀνίαζουσα. Τιταινομένη δ' ὀδυνησιν
Ορμιῆ λαγόνας προστύσσεϛ. Αιψα δε χαίτης
Ιππείης ἰδόνακος τε διέδραμεν, ἐς δ' ἁλιῆος
Δεξιτερην ἔσκηψε φερώνυμον ἰχθυος ἄλγος.
Πολλάκι δ' εκ παλάμης κάλαμος πέσεν, ὅπλά τε θήρης
Τοῖος γαρ κρύσαλλος ενιζεϛ ἀυτικα χειρί.

The hook'd *Torpedo* ne'er forgets its art,
But ſoon as ſtruck begins to play its part,
And to the line applies its magic ſides,
Without delay the ſubtile power glides
Along the pliant rod, and ſlender hairs,
Then to the fiſher's hand as ſwift repairs:
Amaz'd he ſtands; his arm's of ſenſe bereft,
Down drops the idle rod; his prey is left:
Not leſs benumb'd, than if he had felt the whole
Of froſt's ſevereſt rage beneath the *arctic* pole.

But great as its powers are when the fiſh is in vigor, they are impaired as it declines in ſtrength, and totally ceaſe when it expires. They impute no noxious qualities to it as a food, being commonly eat by the *French*, who find them more frequently on their coaſts than we do on ours.

This wonderful faculty is occaſioned by a moſt rapid, frequent, and violent contraction and exertion of its muſcles, againſt any object that touches it. The cauſe is prettily explained by M. *Reaumur**, to whom we refer the inquiſitive reader for a farther account.

We may mention a double uſe in this ſtrange power the *torpedo* is endued with; the one, when it is exerted as a means of defence againſt voracious fiſh, who are at a touch deprived of all poſſibility of ſeizing their prey.

The other is well explained by *Pliny*, who tells us, it attains by the ſame powers its end in reſpect to thoſe fiſh it wiſhes to enſnare. *Novit* torpedo *vim ſuam, ipſa non torpens; merſaque in limo ſe occultat piſcium qui ſecuri ſupernatantes obtorpuere, corripiens***.

Deſcr. Theſe fiſh are ſometimes found of the weight of fifteen pounds.

The body is almoſt circular, and is thicker than others of the ray kind. The ſkin is ſoft, ſmooth,

* *Hiſt. de l'Academie des Sciences*, 1714.

** "The *torpedo* is well acquainted with its own powers, "tho' itſelf never affected by them. It conceals itſelf in the "mud, and benumbing the fiſh that are careleſsly ſwimming "about, makes a ready prey of them."

and

and of a yellowiſh color, marked with large annular ſpots: the eyes very ſmall, and almoſt covered with the ſkin; behind each is a ſemilunar orifice; the mouth is placed below, and furniſhed with ſmall ſharp teeth.

Along each ſide of the body is a narrow fin; near the vent two others. The tail is thick towards the baſe, and grows ſmall towards the end: on the upper part are two ſmall fins placed near each other; the end is round.

Theſe fiſh inhabite hot, or at leaſt warm climates, and are very rarely taken in the *Britiſh* ſeas: the only one we ever heard of on our coaſts, being took off the county of *Waterford*.

** With blunt teeth.

V. The THORNBACK.

La Raye bouclée. *Belon.* 70.
Raia clavata. *Rondel.* 353. *Geſner piſc.* 795.
Steinroch. *Schonevelde*, 59.
Thornback. *Wil. Icth.* 74. *Raii ſyn. piſc.* 26.
Raia clavata. *Lin. ſyſt.* 297. *Gronov. Zooph. No.* 154.
R. aculeata dentibus tuberculoſis, cartilagine tranſverſa abdominali. *Arted. ſynon.* 94.
Racka. *Faun. ſuec. No.* 293.

THIS common fiſh is eaſily diſtinguiſhed from the others by the rows of ſtrong ſharp ſpines, diſpoſed along the back and tail. In a large one we ſaw, were three rows on the back, and five on the tail, all inclining towards its end.

On the noſe, and on the inner ſide of the forehead near the eyes, were a few ſpines, and others were

were ſcattered without any order on the upper part of the pectoral fins.

The mouth was ſmall, and filled with granulated teeth.

The upper part of the body was of a pale aſh-color, marked with ſhort ſtreaks of black, and the ſkin rough, with ſmall tubercles like ſhagreen.

The belly white, croſſed with a ſtrong ſemilunar cartilage beneath the ſkin: in general the lower part was ſmooth, having only a few ſpines on each ſide.

The young fiſh have very few ſpines on them, and their backs are often ſpotted with white, and each ſpot is encircled with black.

Food. This ſpecies frequents our ſandy ſhores, are very voracious, and feed on all ſorts of flat fiſh, and are particularly fond of herrings and ſand eels, and ſometimes eat cruſtaceous animals ſuch as crabs.

Theſe ſometimes weigh fourteen or fifteen pounds, but with us ſeldom exceed that weight.

They begin to generate in *June*, and bring forth their young in *July* and *Auguſt*, which (as well as thoſe of the ſkate) before they are old enough to breed, are called *maids*. The thornback begins to be in ſeaſon in *November*, and continues ſo later than ſkate, but the young of both are good at all times of the year.

VI. The

VI. The STING RAY.

Τρυγων. *Ariſt. Hiſt. an. lib.* viii. *c.* 13. ix. 37. *Oppian. Halieut.* I. 104. ii. 462.
Paſtinaca *Plinii lib.* ix. *c.* 42, 38.
La Paſtenade de mer, Tourterelle, ou Tareronde. *Belon.* 83
Paſtinaca. *Rondel.* 331. *Geſner piſc.* 679.
Steckroche. Grone Tepel. *Schonevelde*, 58.
Paſtinaca marina lævis. *Will. piſc.* 67.
Fire Flaire. *Raii ſyn. piſc.* 24.
Raia Paſtinaca. *Lin. ſyſt.* 396.
Raia corpore glabro, aculeo longo anterius ſerrato, cauda apterygia. *Arted. ſynon.* 100. *Gronov. Zooph. No.* 158.

THE weapon with which nature hath armed this fiſh, hath ſupplied the antients with many tremendous fables relating to it. *Pliny*, *Ælian*, * and *Oppian*, have given it a venom that affects even the inanimate creation: trees that are ſtruck by it inſtantly loſe their verdure and periſh, and rocks themſelves are incapable of reſiſting the potent poiſon.

The enchantreſs *Circe*, armed her ſon with a ſpear headed with the ſpine of the *Trygon*, as the moſt irreſiſtible weapon ſhe could furniſh him with, and with which he afterwards committed parricide, unintentionally, on his father *Ulyſſes*.

That ſpears and darts might, in very early times, have been headed with this bone inſtead of iron, we have no kind of doubt: that of another ſpecies of this fiſh being ſtill uſed to point the arrows of ſome of the *South American Indians*, and is, from its hardneſs, ſharpneſs, and beards, a moſt dreadful weapon.

* *Hiſt. an. lib.* ii. *c.* 36.

But in reſpect to its venemous qualities there is not the leſt credit to be given to the opinion, tho' it was believed (as far as it affected the animal world) by *Rondeletius*, *Aldrovand*, and others, and even to this day by the fiſhermen in ſeveral parts of the kingdom. It is in fact the weapon of offence belonging to the fiſh, capable of giving a very bad wound, and which is attended with dangerous ſymptoms, when it falls on a tendinous part, or on a perſon in a bad habit of body. As to any fiſh having a ſpine charged with actual poiſon, we muſt deny our aſſent to it, tho' the report is ſanctified by the name of *Linnæus**.

Deſcr. This ſpecies does not grow to the bulk of the the others: that which we examined was two feet nine inches from the tip of the noſe to the end of the tail; to the origin of the tail one foot three inches; the breadth one foot eight.

The body is quite ſmooth, of a ſhape almoſt round, and is of a much greater thickneſs, and more elevated form in the middle than any other *Rays*, but grows very thin towards the edges.

The noſe is very ſharp pointed, but ſhort; the mouth ſmall, and filled with granulated teeth.

The irides are of a gold color: behind each eye the orifice is very large.

* *Syſt. Nat.* I. 348. He inſtances the *Paſtinaca*, the *Torpedo*, and the *Tetrodon lineatus*. The firſt is incapable of conveying a greater injury than what reſults from the meer wound. The ſecond, from the vehemence of its ſhock: and the third, by imparting a pungent pain like the ſting of nettles, occaſioned by the minute ſpines on its abdomen.

The

The tail is very thick at the beginning: the ſpine is placed about a third the length of the former from the body, is about five inches long, flat on the top and bottom, very hard, ſharp pointed, and the two ſides thin, and cloſely and ſharply bearded the whole way. The tail extends four inches beyond the end of this ſpine, and grows very ſlender at the extremity. Tail.

Theſe fiſh are obſerved to ſhed their ſpine, and to renew them annually; ſometimes the new ſpine appears before the old one drops off, and the *Corniſh* call this ſpecies *Cardinal Triloſt*, or three tailed, when ſo circumſtanced.

The colour of the upper part of the body is a dirty yellow, the middle part of an obſcure blue; the lower ſide white, the tail and ſpine duſky.

Genus VI. Slender body growing leſs towards the tail.
Two fins on the back.
Rough ſkin.
Five apertures on the ſides of the neck.
Mouth, generally placed far beneath the end of the noſe.
The upper part of the tail longer than the lower. SHARKS.

* Without the anal fin.

I. The ANGEL FISH.

Πιννη. *Ariſt. Hiſt. an. lib.* v. *c.* 5, &c. *Athenæus, lib.* vii. *p.* 319.
Oppian Halieut. I. 388, 742.
Squatina *Plin. lib.* ix. *c.* 12. Rhina, ſc. Squatus. *lib.* xxxii. *c.* 11.
L'Ange, ou Angelot de mer. *Belon.* 69.
Squatina. *Rondel.* 367. *Geſner. piſc.* 899. *Wil. Icth.* 79.
Monk, or Angel Fiſh. *Raii ſyn. piſc.* 26.
Squalus ſquatina. *Lin. ſyſt.* 398. S. pinna ani nulla, caudæ duabus, ore terminali, naribus cirroſis. *Ibid.*
Sq. pinna ani carens, ore in apice capitis. *Arted. ſyn.* 95. *Gronov. Zooph. No.* 151.

THIS is the fiſh which connects the genus of rays and ſharks, partaking ſomething of the character of both; yet in an exception to each in the ſituation of the mouth, which is placed at the extremity of the head.

It is a fiſh not unfrequent on moſt of our coaſts, where it prowls about for prey like others of the kind. It is extremely voracious, and, like the ray, feeds

feeds on flounders and flat fish, which keep at the bottom of the water, as we have often found on opening them. It is extremely fierce and dangerous to be approached. We knew an instance of a fisherman, whose leg was terribly tore by a large one of this species, which lay within his nets in shallow water, and which he went to lay hold of incautiously. Fierceness.

The aspect of these, as well as the rest of the genus, have much malignity in them: their eyes are oblong, and placed lengthways in their head, sunk in it, and overhung by the skin, and seem fuller of malevolence than fire.

Their skin is very rough; the antients made use of it to polish wood and ivory *, as we do at present that of the greater dog-fish. The flesh is now but little esteemed on account of its coarseness and rankness, yet *Archestratus* (as quoted by *Athenæus*, p. 319) speaking of the fish of *Miletus*, gives this the first place in respect to its delicacy of the whole cartilaginous tribe.

They grow to a great size; we have seen them of near an hundred weight. Descr.

The head is large, the teeth broad at their base, but slender and very sharp above, and disposed in five rows all round the jaws. Like those of all sharks, they are capable of being raised or depressed by means of muscles uniting them to the jaws, not being lodged in sockets as the teeth of cetaceous fish are.

* Qua lignum et ebora poliuntur. *Plinii lib.* ix. *c.* 12.

The tongue is large; the eyes ſmall; the pupil of a pale green; the irides white, ſpotted with brown: behind each eye is a ſemilunar orifice.

The back is of a pale aſh-color, and very rough; along the middle is a prickly tuberculated line: the belly is white and ſmooth.

The pectoral fins are very large, and extend horizontally from the body to a great diſtance; they have ſome reſemblance to wings, ſo writers have given this the name it bears in this work.

The ventral fins are placed in the ſame manner, and the double penis is placed in them, which forms another character of the males in this and the laſt genus.

The tail is bifurcated, the upper lobe rather the longeſt: not very remote from the end on the back are two fins.

II. The

II. The PICKED DOG FISH.

ἀκανθίας γαλέος. *Ariſt. Hiſt. an. lib.* vi. *c.* 10. *Oppian Halieut.* I. 380.

Επινωτις *Athenæi lib.* vii. *p.*

L'Eſguillats. *Belon.* 61.

Galeus acanthias. *Rondel.* 373. *Geſner. piſc.* 607.

Sperhaye, Dornhundt. *Schonevelde*, 29.

Galeus acanthias ſive ſpinax. *Wil. Icth.* 56.

The picked dog, or hound fiſh. *Raii ſyn. piſc.* 21.

Squalus ſpinax. *Lin. ſyſt.* 397. Sq. pinna ani nulla, dorſalibus ſpinoſis, corpore teretiuſculo. *Ibid.*

Sq. pinna ani nulla, corpore ſubrotundo. *Arted. ſynon.* 94.

Hai. *Faun. ſuec. No.* 295. *Gronov. Zooph.* 149.

THE picked dog fiſh takes its name from a ſtrong and ſharp ſpine placed juſt before each of the back fins, diſtinguiſhing it at once from the reſt of the *Britiſh* ſharks. Name.

The noſe is long, and extends greatly beyond the mouth, but is blunt at the end. Deſcr.

The teeth are diſpoſed in two rows, are ſmall and ſharp, and bend from the middle of each jaw towards the corners of the mouth.

The firſt back fin is placed nearer the head than the tail; the other is ſituated very near the latter.

The tail is finned for a conſiderable ſpace beneath, and the upper part is much the longeſt.

The back is of a browniſh aſh-color; the belly white.

It grows to the weight of about twenty pounds.

III. The BASKING SHARK.

Sun-fiſh. *Smith's Hiſt. Cork*, ii. 292. *Hiſt. Waterford*, 271.

THIS ſpecies has been long known to the inhabitants of the ſouth and weſt of *Ireland*, and thoſe of *Caernarvonſhire* and *Angleſea*; but having never been conſidered in any other than a commercial view, has till this time remained undeſcribed, at leſt by any *Engliſh* writer*; and what is worſe, miſtaken for and confounded with the *luna* of *Rondeletius*, the ſame that our *Engliſh* writers call the *ſunfiſh*.

The *Iriſh* and *Welch* give it the ſame name, from its lying as if to ſun itſelf on the ſurface of the water; and for the ſame reaſon we have taken the liberty of calling it the baſking ſhark. It was long taken for a ſpecies of whale, till we pointed out the branchial orifices on the ſides, and the perpendicular ſite of the tail.

Theſe are migratory fiſh, or at leſt it is but in a certain number of years that they are ſeen in multitudes on the *Welch* ſeas, tho' in moſt ſummers a ſingle and perhaps ſtrayed fiſh appears.

* *Linnæus*, *p.* 400. mentions a ſpecies, which in ſize, and in ſome other reſpects, reſembles this; but his differs in having a ſmall anal fin. It is his *Squalus maximus. S. dentibus caninis, pinna dorſali anteriore majore.* He ſays it inhabites the *arctic* ſeas, and feeds on *meduſæ* (ſea jellies) that it rivals the whale in ſize, has no orifice near the eyes, and has a ſmall anal fin.

They

They visited the bays of *Caernarvonshire* and *Angleſea* in vaſt ſhoals, in the ſummers of 1756 *, and a few ſucceeding years, continuing there only the hot months, for they quitted the coaſt about *Michaelmas*, as if cold weather was diſagreeable to them.

They had nothing of the fierce and voracious nature of the ſhark kind, and were ſo tame as to ſuffer themſelves to be ſtroked: they generally lay motionleſs on the ſurface, commonly on their bellies, but ſometimes, like tired ſwimmers, on their backs.

Their food ſeemed to conſiſt entirely of ſea plants, no remains of fiſh being ever diſcovered in the ſtomachs of numbers that were cut up, except ſome green ſtuff, the half digeſted parts of algæ, and the like. Food.

At certain times they were ſeen ſporting on the waves, and leaping with vaſt agility ſeveral feet out of the water.

Their length was from three to eleven yards, but the laſt was a rare ſize.

Their form was rather ſlender, like others of the ſhark kind.

The upper jaw was much longer than the lower, and blunt at the end. The mouth placed beneath, and each jaw furniſhed with numbers of ſmall teeth; thoſe before were much bent, thoſe more remote in the jaws, were conic and ſharp pointed. Teeth.

On the ſides of the neck were five large tranſverſe apertures to the gills.

* Some old people ſay they recollect the ſame ſort of fiſh viſiting theſe ſeas in vaſt numbers about forty years ago.

On

On the back were two fins; the firſt very large, not directly in the middle of the back, but rather nearer the head; the other ſmall, and ſituated near the tail. On the lower part were four others, viz. two pectoral fins, and two ventral fins; the laſt placed juſt beneath the hind fin of the back. Near theſe the male had two genitals, and between theſe fins was ſituated the pudendum of the female.

The tail was very large, and the upper part remarkably longer than the lower.

The color of the upper part of the body was a deep leaden; the belly white.

The ſkin was rough, like ſhagreen, but leſs ſo on the belly than the back.

Within ſide the mouth, towards the throat, was a very ſhort ſort of whalebone.

Liver. The liver was of a great ſize, but that of the female was the largeſt; ſome weighed above a thou-

Oil. ſand pounds, and yielded a great quantity of pure and ſweet oil, fit for lamps, and alſo much uſed by the people who took them, to cure bruiſes, burns, and rheumatic complaints. A large fiſh has afforded to the captors a profit of twenty pounds. They were viviparous, a young one about a foot in length being found in the belly of a fiſh of this kind.

They were taken with harpoons with long lines fixed to them in much the ſame manner as whales are, and when ſtruck go off with vaſt rapidity, and dart inſtantly to the bottom, taking with them forty or fifty fathom of line, and are a long time before they are quite ſubdued.

The

The fiſhers obſerved on them a ſort of leech of a reddiſh color, and about two feet long, but which fell off when the fiſh was brought to the ſurface of the water, and left a white mark on the ſkin.

The ſame perſons aſſert, that there were two ſpecies of this fiſh; a leſſer ſort, about two yards in length, which had in the mouth only three rows of teeth, and thoſe larger than in the kind we have deſcribed, being an inch and an half long.

This account we digeſted from materials furniſhed by the Rev. Mr. *Farrington*, and the Rev. Mr. *Williams*, Rector of *Lanvair yn Hornwy*, in *Angleſea*; for it has not been our fortune to ſee more of this fiſh than fragments of the ſkin, jaws, and what is ſtyled whalebone: they have now in a manner quitted the coaſts, ſcarce one in a ſummer appearing in thoſe ſeas.

** With the anal fin.

IV. The WHITE SHARK.

Λαμία? *Ariſt. Hiſt. an. lib.* v. *c.* 5. ix. *c.* 37.

Λάμνη. *Oppian Halieut.* I. 370. v. 36.

Καρχαρίας Κυων. *Athen. lib.* vii. *p.* 310.

Lamia? *Plinii lib.* ix. *c.* 24.

Le chien carcharien ou Perlz fiſch de Norvege. *Belon.* 52. 87.

Lamia. Tiburo. *Rondel.* 489. 390.

Canis Carcharias. *Geſner piſc.* 173.

White Shark. *Wil. Icth.* 47. *Raii ſyn. piſc.* 18.

Squalus carcharias. Sq. dorſo plano dentibus ſerratis. *Lin. ſyſt.* 400.

Arted. ſynon. 89. *Gronov. Zooph. No.* 143.

Size. THIS grows to a very great bulk, *Gillius* ſays, to the weight of four thouſand pounds; and that in the belly of one was found a human corps entire, which is far from incredible, conſidering their vaſt greedineſs after human fleſh.

They are the dread of the ſailors in all hot climates, where they conſtantly attend the ſhips in expectation of what may drop overboard; a man that has that misfortune periſhes without redemption: they have been ſeen to dart at him, like gudgeons to a worm. A maſter of a *Guinea* ſhip informed me, that a rage of ſuicide prevailed among his new bought ſlaves, from a notion the unhappy creatures had, that after death they ſhould be reſtored again to their families, friends, and country. To convince them at leſt that they ſhould not re-animate their bodies, he ordered one of their corpſes to be tied by the

the heels to a rope, and lowered into the ſea, and tho' it was drawn up again as faſt as the united force of the crew could be exerted, yet in that ſhort ſpace the ſharks had devoured every part but the feet, which were ſecured at the end of the cord.

Swimmers very often periſh by them; ſometimes they loſe an arm or leg, and ſometimes are bit quite aſſunder, ſerving but for two morſels for this ravenous animal: a melancholy tale of this kind is related in a *Weſt India* ballad, preſerved in Mr. *Percy*'s reliques of ancient *Engliſh* poetry*.

The mouth of this fiſh is furniſhed with (ſometimes) a ſixfold row of teeth, flat, triangular, exceedingly ſharp at their edges, and finely ſerrated. We have one that is rather more than an inch and an half long. *Grew*** ſays, that thoſe in the jaws of a ſhark two yards in length, are not half an inch, ſo that the fiſh to which mine belonged muſt have been ſix yards long, provided the teeth and body keep pace in their growth†. Teeth.

This dreadful apparatus, when the fiſh is in a ſtate of repoſe, lie quite flat in the mouth, but when he ſeizes his prey, he has power of erecting them, by the help of a ſet of muſcles that join them to the jaw.

The mouth is placed far beneath, for which reaſon theſe, as well as the reſt of the kind, are ſaid to

* *Vol.* I. 331.

** *Rarities*, 91.

† Foſſil teeth of this fiſh are very frequent in *Malta*, ſome of which are four inches long.

be obliged to turn on their backs to ſeize their prey, which is an obſervation as antient as the days of *Pliny**.

The eyes are large; the back broad, flat, and ſhorter than that of other ſharks. The tail is of a ſemilunar form, but the upper part is longer than the lower. It has vaſt ſtrength in the tail, and can ſtrike with great force, ſo that the ſailors inſtantly cut it off with an axe as ſoon as they draw one on board.

The pectoral fins are very large, which enables it to ſwim with great ſwiftneſs.

The color of the whole body and fins is a light aſh.

The antients were acquainted with this fiſh; and *Oppian* gives a long and entertaining account of its capture. Their fleſh is ſometimes eaten, but is eſteemed both coarſe and rank.

V. The BLUE SHARK.

Γλαυκος. *Ælian. an. lib.* I. *c.* 16.
Galeus glaucus. *Rondel.* 378. *Geſner piſc.* 609.
Blew ſhark. *Wil. Icth.* 49. *Raii ſyn. piſc.* 20.
Squalus foſſula triangulari in extremo dorſo, foraminibus nullis ad oculos, *Arted. ſyn.* 98.
Squalus glaucus. *Lin. ſyſt.* 401.

ÆLIAN relates ſtrange things of the affection this ſpecies bears to its young: among others, he ſays, that it will permit the ſmall brood, when in danger, to ſwim down its mouth, and take ſhel-

* *Omnia autem carnivora ſunt talia et ſupina veſcantur. lib.* ix. *c.* 24.

ter

ter in its belly. This fact has been ſince confirmed by the obſervation of one of our beſt icthyologiſts*, and is no more incredible, than that the young of the *Opoſſum* ſhould ſeek an aſylum in the ventral pouch of its parent, a fact too well known to be conteſted. But this degree of care is not peculiar to the blue ſhark, but we believe common to the whole genus.

This ſpecies frequents many of our coaſts, but particularly thoſe of *Cornwall* during the pilchard ſeaſon, and is at that time taken with great iron hooks made on purpoſe.

It is of an oblong form: the noſe extends far beyond the mouth: it wants the orifices behind the eyes, which are uſual in this genus: the noſtrils are long, and placed tranſverſely. *Artedi* remarks a triangular dent in the lower part of the back. Defcr.

The ſkin is ſmoother than that of other ſharks; the back is of a fine blue color; the belly of a ſilvery white.

Linnæus ſays, that its teeth are granulated; for our part we muſt confeſs it is a fiſh that has not come under our examination, therefore hope to be favored with an accurate deſcription from ſome Naturaliſt, who lives on the coaſt it haunts.

We may add, that *Rondeletius* ſays he was an eye-witneſs to its fondneſs for human fleſh; that theſe fiſh are leſs deſtructive in our ſeas, is owing to the coolneſs of the climate, which is well known to abate the fierceneſs of ſome, as well as the venom of other animals.

* *Rondeletius*, 388.

VI. The

VI. The SEA FOX.

Αλωπεξ? *Ariſt. Hiſt. an. lib.* ix. *c.* 37. *Ælian Var. Hiſt. lib.* I. *c.* 5.
Oppian Halieut. I. 381. iii. 144.
Vulpes *Plinii. lib.* ix. *c.* 43.
Singe de mer. *Belon.* 88.
Vulpes marina. *Rondel.* 337. *Geſner piſc.* 1045.
Cercus *Cæſii opuſc.* 110.
Sea Fox, or Ape. *Wil. Icth.* 54. *Raii ſyn. piſc.* 20.
Squalus cauda longiore quam ipſum corpus. *Arted. ſyn.* 96.
Sea Fox. Threſher. *Borlaſe Cornwall.* 265.

Tail. THIS fiſh is moſt remarkable for the great length of the tail: the whole meaſure of that we had an opportunity of examining, was thirteen feet, of which the tail alone was more than ſix, the upper part extending greatly beyond the lower, almoſt in a ſtrait line.

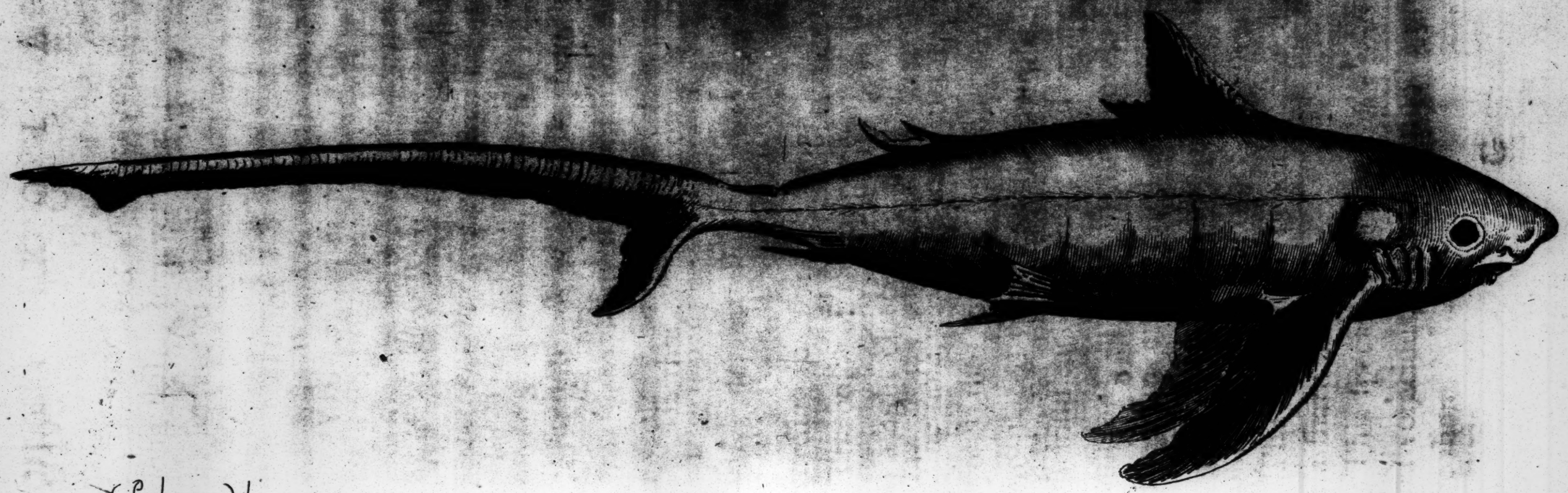
The body was round and ſhort: the noſe ſhort but ſharp pointed: the eyes large, and placed immediately over the corners of the mouth, which was ſmall, and placed not very diſtant from the end of the noſe.

The teeth are ſmall for the ſize of the fiſh, and placed in three rows.

The back was aſh-color; the belly white.

The antients ſtyled this fiſh Αλωπεξ, and *Vulpes*, from its ſuppoſed cunning. They believed, that when it had the misfortune to have taken a bait, it ſwallowed the hook till it got at the cord, which it bit off, and ſo eſcaped.

They are ſometimes taken in our ſeas, and have been imagined to be the fiſh called the *Threſher*, from



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from its attacking and beating the *Grampus* with its long tail, whenever that ſpecies of whale riſes to the ſurface to breathe.

VII. The T O P E.

Κυων? *Ariſt. Hiſt. an. lib.* vi. *c.* 11.
Canicula? *Plinii lib.* ix. *c.* 46.
Le chien de mer, ou Canicule. *Belon.* 65.
Canis galeus. *Rondel.* 377. *Geſner piſc.* 167.
The Tope. *Wil Icth.* 51. *Raii ſyn. piſc.* 20.
Squalus naribus ori vicinis; foraminibus exiguis ad oculos. *Arted. ſynon.* 97.
Squalus galeus. *Lin. ſyſt.* 399. *Gronov. Zooph. No.* 142.

ONE that was taken on our coaſt the laſt year weighed twenty-ſeven pounds, and its length was five feet; but they grow to a greater ſize, ſome, according to *Artedius*, weighing an hundred pounds. Size.

The color of the upper part of the body and fins was a light cinereous; the belly white.

The noſe was very long, flat, and ſharp pointed; beyond the noſtrils ſemitranſparent. The noſtrils were placed very near the mouth.

Behind each eye was a ſmall orifice. The teeth were numerous, diſpoſed in three rows, ſmall, very ſharp, triangular, and ſerrated on their inner edge.

The firſt back fin was placed about eighteen inches from the head; the other very near the tail.

The tail finned beneath, the upper part ended in a ſharp angle.

This ſpecies is ſaid by *Rondeletius* to be very fierce and voracious, even to purſue its prey to the edge of the ſhore.

Its skin and flesh has an offensive rank smell; therefore we suppose Mr. *Dale* gave it ironically the title of *Sweet William* *.

VIII. The GREATER DOG FISH.

Νεβριας. Σκύλιος, Ασερίας? *Arist. Hist. an. lib.* v. *c.* 10. vi. *c.* 10, 11.
Ποικιλος? *Oppian Halieut.* l. 381.
La Rousſete commune. *Belon.* 65.
Canicula *Aristotelis*. *Rondel.* 380. *Gesner pisc.* 168.
Catulus major vulgaris. *Wil. Icth.* 62.
Greater Cat fish: the Bounce. *Raii syn. pisc.* 22.
Squalus ex rufo varius, pinna ani medio inter anum et caudem pinnatum. *Arted. syn.* 97.
Squalus canicula. *Lin. syst.* 399. *Gronov. Zooph. No.* 145.
Greater Cat fish. *Edw.* 289.

THIS species being remarkably spotted, may be the same known to antients by the names expressed in the synonyms; but they so frequently leave such slight notices of the animals they mention, that we are often obliged to add a doubtful mark (?) to numbers of them.

Descr. The weight of one we took was six pounds three ounces, and yet it measured three feet eight inches in length; so light are the cartilaginous fish in respect to their size.

The nose was short, and very blunt, not extending above an inch and an half beyond the mouth. The nostrils were large, placed near the mouth, and covered with a large angular flap: the head very flat.

* *Hist. Harwich*, 420.

The

The eyes were oblong, behind each a large orifice opening to the inſide of the mouth.

The teeth ſmall, ſharp, ſmooth at their ſides, ſtrait, and diſpoſed in four rows.

Both the back fins were placed much behind, and nearer the tail than in common.

The tail was finned, and below extended into a ſharp angle.

The color of the whole upper part of the body, and the fins, was brown, marked with numbers of large diſtinct black ſpots: ſome parts of the ſkin were tinged with red; the belly was white.

The whole was moſt remarkably round, and had a ſtrong ſmell.

We think it is this ſpecies which furniſhes what anglers call *Indian graſs*, being the tendrils that iſſue from each end of the purſe of this fiſh, which are much more delicate and ſlender than thoſe of any other.

The female of this ſpecies, and we believe of other ſharks, is greatly ſuperior in ſize to the male; ſo that in this reſpect there is an agreement between the fiſh and the birds of prey *. They bring about nineteen young at a time: the fiſhermen believe that they breed at all times of the year, as they ſcarce ever take any but what are with young.

To this kind may be added, as a meer variety, the

Catulus maximus. *Wil. Icth.* 63. *Raii ſyn. piſc.* 22.
Squalus cinereus, pinnis ventralibus diſcretis. *Arted. ſyn.* 97.
Squalus ſtellaris. *Lin. ſyſt.* 399.
No. 145. *Gronov. Zooph.*

* Vide *Britiſh Zoology, vol.* I. 130.

The chief difference ſeeming to be in the color and the ſize of the ſpots; the former being grey, the latter fewer but larger than in the other.

IX. The LESSER DOG FISH.

Le muſcarol? *Belon.* 64.
Catulus minor. *Wil. Icth.* 64.
Leſſer Rough Hound, or Morgay. *Raii ſyn. piſc.* 22.
Squalus dorſo vario, pinnis ventralibus concretis. *Artedi ſynon.* 97.
Squalus catulus. *Lin. ſyſt.* 400. *Gronov. Zooph. No.* 144.

THE weight of one that was brought to us by a fiſherman was only one pound twelve ounces; the length two feet two inches: it is of a ſlender make in all parts.

The head was flat: the noſtrils covered with a long flap: the noſe blunt, and marked beneath with numerous ſmall punctures: behind each eye was a ſmall orifice: the back fins like thoſe of the former, placed far behind.

The ventral fins are united, forming as if it were but one, which is a ſure mark of this ſpecies.

The tail finned like that of the greater dog fiſh.

The color is cinereous, ſtreaked in ſome parts with red, and generally marked with numbers of ſmall black ſpots; but we have obſerved in ſome that they are very faint and obſcure.

The belly is white.

This ſpecies breeds from nine to thirteen young at a time, are very numerous on ſome of our coaſts, and very injurious to the fiſheries.

X. The

X. The SMOOTH HOUND.

Γαλεὸς λεῖος ? *Ariſt. Hiſt. an. lib.* vi. *c.* 10. *Oppian. lib.* I. 380.
Galeus lævis. *Rondel.* 375. *Geſner piſc.* 608.
Muſtelus lævis primus. *Wil. Icth.* 60.
Smooth or unprickly hound. *Raii ſyn. piſc.* 22.
Squalus dentibus obtuſis ſeu granuloſis. *Arted. ſyn.* 93.
Squalus muſtelus. *Lin. ſyſt.* 400. *Gronov. Zooph. No.* 142.

THIS ſpecies is called ſmooth, not that the ſkin is really ſo, but becauſe it wants the ſpines on the back, which are the character of the ſecond ſpecies, the Picked Dog.

The noſe extends far beyond the mouth, and the end blunt: the holes behind the eyes are ſmall; the back is leſs flat than that of others of this genus.

The firſt back fin is placed midway above the pectoral and ventral fins: the pectoral fins are ſmall.

The tail forked, but the upper part is much the longeſt.

The teeth reſemble thoſe of a Ray, rough and ſharp.

The color of the back and ſides aſh, and free from ſpots; the belly ſilvery.

XI. The PORBEAGLE.

The Porbeagle. *Borlaſe Cornwall*, 265. *tab.* 26.

THE figure of this fiſh, engraved after a drawing by the Rev. Mr. *Jago* *, is preſerved in Doctor *Borlaſe*'s Natural Hiſtory of *Cornwall*.

As it is not attended with any account farther than that it is a *Corniſh* fiſh, and a ſmall ſpecies of ſhark, we are obliged to form the beſt deſcription we can from the print.

The noſe appears to be very long, ſlender towards the end, and ſharp pointed. The mouth placed far beneath; the body very thick and deep, but extremely ſlender, juſt at the ſetting on of the tail.

The firſt back fin is placed almoſt in the middle, the other pretty near the tail.

The belly very deep: the ventral and anal fins ſmall.

The tail bifurcated; the upper fork a little longer than the lower.

* This gentleman was miniſter of *Loo*, in *Cornwall*, and appears to have been well acquainted with the Hiſtory of Fiſh. He communicated figures of ſeveral of the *Corniſh* fiſh, with a brief account of each to *Petiver*, at whoſe inſtance, as Doctor *Derham* tells us, in the preface to Mr. *Ray*'s Itineraries, p. 69, he added them to the Synopſis *Avium et piſcium*, p. 162. A few others of his drawings are alſo preſerved in the Natural Hiſtory of *Cornwall*, and ſeem to be executed with ſkill and accuracy.

Genus VII. One aperture behind each ventral fin.
Large, flat, and circular head and body.
Teeth numerous and ſmall in the jaws, roof of the mouth, and on the tongue.
Pectoral fins broad and thick.

FISHING FROG.

I. The COMMON FISHING FROG.

Βατραχος. *Ariſt. Hiſt. an. lib.* iv. *c.* 37. *Oppian Halieut.* ii. 86.

Rana piſcatrix. *Ovid. Halieut.* 126. *Plinii lib.* ix. *c.* 24.

La Grenoille de mer, ou peſcheuſe. Le Diable de mer, Bauldroy & Peſcheteau. *Belon.* 77.

Rana piſcatrix. *Rondel.* 363. *Geſner piſc.* 813.

Seheganſs, ſeheteuffel, ſehetode. *Schonevelde*, 59.

Toad-fiſh, Frog-fiſh, or Sea-Devil. *Wil. Icth.* 85. *Raii ſyn. piſc.* 29.

Lophius ore cirroſo. *Arted. ſyn.* 87.

Lophius piſcatorius. *Lyn. ſyſt.* 402.

L. p. depreſſus capite rotundato. *Faun. ſuec.* No. 298. *Gronov. Zooph. No.* 207.

THIS ſingular fiſh was known to the antients by the name of Βατραχος, and *Rana*, and to us by that of the fiſhing frog, for it is of a figure reſembling that animal in a tadpole ſtate. *Pliny* takes notice of the artifice uſed by it to take its prey: *Eminentia ſub oculis cornicula turbato limo exerit, aſſultantes piſciculos attrahens, donec tam prope accedant, ut aſſiliat.* "It puts forth the ſlender horns "it has beneath its eyes, enticing by that means the Name.

" little fiſh to play round, till they come within " reach, when it ſprings on them *.

Deſcr. The fiſhing frog grows to a large ſize, ſome being between four and five feet in length; and we have heard of one taken near *Scarborough*, whoſe mouth was a yard wide. The fiſhermen on that coaſt have a great regard for this fiſh, from a ſuppoſition that it is a great enemy to the dog fiſh**, and whenever they take it with their lines, always ſet it at liberty.

It is a fiſh of very great deformity: the head is much bigger than the whole body, is round at the circumference, and flat above: the mouth of a prodigious wideneſs.

The under jaw is much longer than the upper: the jaws are full of ſlender ſharp teeth: in the roof of the mouth are two or three rows of the ſame: at the root of the tongue, oppoſite each other, are two bones of an elliptical form, thick ſet, with very ſtrong ſharp teeth.

The noſtrils do not appear externally, but in the upper part of the mouth are two large orifices that ſerve inſtead of them.

On each ſide the upper jaw are two ſharp ſpines, and others are ſcattered about the upper part of the head.

Immediately above the noſe are two long tough filaments, and on the back three others; theſe are

* *Cicero*, in his ſecond of *De Natura Deorum*, gives much the ſame account of this fiſh: *Ranæ autem marinæ dicuntur obruere ſeſe arena ſolere, et moveri propè aquam, ad quas, quaſi ad eſcam, piſces cum acceſſerint, confici a ranis, atque conſumi.*

** The bodies of theſe fierce and voracious fiſh are often found in the ſtomach of the *Fiſhing Frog*.

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FISHING FROG.

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what *Pliny* calls *cornicula*, and ſays it makes uſe of to attract the little fiſh.

Along the edges of the head and body are a multitude of ſhort fringed ſkins, placed at equal diſtances.

The ventral fins are broad, thick, and fleſhy, are jointed like arms, and within ſide divided into fingers.

The aperture to the gills is placed behind, each of theſe is very wide, ſo that ſome writers have imagined it to be a receptacle for the young in time of danger.

The back fin is placed very low near the beginning of the tail: the anal fin is placed beneath, almoſt oppoſite the former.

The body grows ſlender near the tail, the end of which is quite even.

The color of the upper part of this fiſh is duſky, the lower part white; the ſkin ſmooth.

II. The LONG FISHING FROG.

Fiſhing Frog of Mount's-Bay. *Borlaſe Cornwall*, 266. *tab.* 27. *fig.* 6. *Phil. Tranſ. vol.* liii. 170.

THIS is a ſpecies at preſent unknown to us, except by deſcription.

It is, ſays Doctor *Borlaſe*, of a longer form than the common kind: the head more bony, rough, and aculeated. It had no fin like appendages round the head, but on each ſide the thinner part of the body, beginning beneath the dorſal fin, and reaching within

two

two inches of the tail, was a ſeries of them, each three quarters of an inch in length.

At the end of the pectoral fins were ſpines an inch and three quarters in length; at the end of the tail others three quarters of an inch long.

Genus VIII. One narrow aperture on each ſide.
The mouth placed far below, tubular and without teeth.
The body long, and often angular.

STURGEON.

I. The STURGEON.

Ονισκος. *Athen. lib.* viii. 315.
Α'κκιπησιος? *Athen. p.* 294.
Acipenſer? *Plinii lib.* ix. *c.* 17. *Ovidii Halieut?*
L'Eſturgeon, *Belon.* 89.
Acipenſer. *Rondel.* 410. *Geſner piſc.* 2.
Sturio. *Geſner piſc.*
Stoer. *Schonevelde.* 9.
Sturgeon. *Wil. Icth.* 239. *Raii ſyn. piſc.* 112.
Schirk. *Kram.* 383.
Acipenſer corpore tuberculis ſpinoſis exaſperato. *Arted. ſyn.* 91.
Acipenſer ſturio. *Lin. ſyſt.* 403. *Muſ. Ad. Fred.* 54. *tab.* 18. *fig.* 2.
Stor. *Faun. ſuec. No.* 299. *Seb. Muſ.* iii. 101. *tab.* 29. *No.* 19.

THAT this is the ὀνισκος of *Dorion*, as quoted by *Athenæus*, is very probable, as well from the account he gives of its form, as of its nature. He ſays its mouth is always open, with which it agrees with the ſturgeon, and that it conceals itſelf in the hot months: this ſhews it to be a fiſh of a cold nature, which is confirmed by the hiſtory of the

the *European* fiſh of this ſpecies, given by Mr. *Forſter**, in his Eſſay on the *Volga*, who relates that they are ſcarce ever found in that river in ſpring or ſummer, but in vaſt quantities in autumn and winter, when they crowd from the ſea under the ice, and are then taken in great numbers.

Whether the *acipenſer* is the ſturgeon of the moderns, may be doubted, otherwiſe *Ovid* would never have ſpoke of it as a foreign fiſh:

Tuque peregrinis, Acipenſer, nobilis undis.
And, thou, a fiſh in foreign ſeas renowned.

It being well known that it is not uncommon in the *Mediterranean*, and even in the mouth of the *Tiber*, at certain ſeaſons; but this paſſage leaves us as much in the dark as to the particular ſpecies intended, by the word *acipenſer*, as the deſcription *Pliny* has given us; for that philoſopher relates, that its ſcales are placed in a contrary direction to thoſe of other fiſh, being turned towards the mouth, which diſagrees with the character of all that are known at preſent. Whatever fiſh it might be, it was certainly the ſame with the *Elops*, or *Helops*, as appears both from *Pliny*, and another line of the poet before-mentioned:

Et pretioſus Helops noſtris incognitus undis.
The pretious *Helops* ſtranger to our ſeas.

The ſturgeon annually aſcends our rivers, but in no great numbers, and is taken by accident in the Migratory.

* *Phil. Tranſ.* lvii. 352.

ſalmon

ſalmon nets. It ſeems a ſpiritleſs fiſh, making no manner of reſiſtance when entangled, but is drawn out of the water like a lifeleſs lump. It is a fiſh that is ſeldom taken far out at ſea, but frequents ſuch parts as are not remote from the æſtuaries of great rivers. It is admired for the delicacy and firmneſs of its fleſh, which is white as veal, and extremely good when roaſted. It is generally pickled. The moſt we receive comes either from the *Baltic* rivers, or *North America:* thoſe cured at *Pillau* have been, till of late, in the greateſt repute; but thro' the encouragement given by the ſociety inſtituted for promoting trade and manufactures, the ſturgeon from our colonies begins to rival thoſe of the *Baltic*.

Great numbers are taken during ſummer in the lakes *Friſche-haff*, and *Curiſch-haff* near *Pillau*, in large nets made of ſmall cord. The adjacent ſhores are formed into diſtricts, and farmed out to companies of fiſhermen, ſome of which are rented for ſix thouſand guilders, or near three hundred pounds *per annum*.

They are found in vaſt abundance in the *American* rivers in *May*, *June*, and *July*, at which time they leap ſome yards out of the water, and falling on their ſides, make a noiſe to be heard in ſtill weather at ſome miles diſtance*.

Caviare. *Caviare* is made of the roes of this, and alſo of all the other ſorts of ſturgeons, dried, ſalted, and packed up cloſe. The beſt is ſaid to be made of thoſe of the *Sterlet***, a ſmall ſpecies frequent in

* *Cateſby Carol. App.* 33. ** *Strahlenberg's Hiſt. Ruſſia*, 337.

the

the *Yaik* and *Volga*. * *Icthyocolla*, or iſing-glaſs, is alſo made of the *ſound* of our fiſh, as well as that of the others, but the *Beluga* affords the beſt**.

The ſturgeon grows to a great ſize, to the length of eighteen feet, and to the weight of five hundred pounds, but it is ſeldom taken in our rivers of that bulk. The largeſt we have known caught in thoſe of *Great Britain* weighed four hundred and ſixty pounds, which was taken about two years ago in the *Eſk*, where they are more frequently found than in our ſouthern waters. Deſcr.

The noſe is very long, ſlender, and ends in a point. The eyes are extremely ſmall; the noſtrils placed near them: on the lower part of the noſe are four cirri or beards: the mouth is ſituated far beneath, is ſmall, and unſupported by any jaw bones; neither has it any teeth.

The body is long, pentagonal, and covered with five rows of large bony tubercles: one row of which is placed on the back, and two on each ſide. The whole under ſide of the fiſh, from the end of

* *Phil. Tranſ.* lvii. 354. a very ſmall quantity is made from this ſpecies, and that only deſigned as preſents to great men, as Mr. *Forſter* aſſured me.

** The antients were acquainted with the fiſh that afforded this drug. *Pliny lib* xxxii. *c*, 7. mentions it under the name of *Icthyocolla*, and ſays, that the glue that was produced from it had the ſame title; and afterwards adds, that it was made out of the belly of the fiſh. The *Mario*, ſaid by *Pliny lib.* ix. *c.* 15. to be found in the *Danube* and the *Boryſthenes*, was certainly of this genus, a cartilaginous fiſh *(nullis oſſibus ſpiniſve interſitis)* reſembling a ſmall porpeſſe *(Porculo marino ſimillimus;)* and very probably may be the ſame with the *Beluga*, which, according to Mr. *Forſter*, *Phil. Tranſ.* lvii. 354. has a ſhort blunt noſe, agreeing in that reſpect with the porpeſſe,

the noſe to the vent, is flat; on the back, not remote from the tail, is a ſingle fin. It has beſides two pectoral fins, two ventral and one anal fin. The tail is bifurcated, but the upper part much longer than the lower.

The upper part of the body is of a dirty olive color: the lower part ſilvery; the middle of the tubercles white.

In the manner of breeding it is an exception among the cartilaginous fiſh, being like the bony fiſh oviparous, ſpawning in winter.

Genus IX. A very deep body, and as if cut off in the middle.
Mouth ſmall.
Two teeth only in each jaw.

SUN-FISH.

I. The OBLONG SUN-FISH.

Sun-Fiſh from Mount's-Bay. *Borlaſe Cornwall*, 268. *tab.* 26. *fig.* 7.

Oſtracion lævis. *Gronov. Zooph. No.* 185.

RONDELETIUS has given this genus the ſynonym of *Orthragoriſcus*, as if it was that which *Pliny** intended by the ſame name; but the account left us by that Naturaliſt is ſo brief, that we do not think ourſelves authorized to place it as

* *Lib.* xxxii. *c.* 2.

a ſynonymous creature. He ſays no more than that it was the greateſt of fiſh, and that it grunted when it was firſt taken, from which probably roſe the name, for according to *Athenæus*, ὀρθαγοριση *, was that given to a young pig. We are inclined to believe, that this fiſh had eſcaped the notice of *Pliny*, otherwiſe he muſt have unavoidably made ſome remark on its ſtriking figure.

They grow to a very large ſize: one that was taken near *Plymouth* in 1734, weighing five hundred pounds. Size.

In form it reſembles a bream, or ſome deep fiſh cut off in the middle. The mouth is very ſmall, and contains in each jaw two broad teeth, with ſharp edges. Deſcr.

The eyes are little; before each is a ſmall ſemi-lunar aperture; the pectoral fins very ſmall, and placed behind them. The dorſal fin, and the anal fin are high, and placed at the extremity of the body: the tail fin is narrow, and fills all the abrupt ſpace between thoſe two fins.

The color of the back is duſky, and dappled; the belly ſilvery: between the eyes and the pectoral fins are certain ſtreaks pointing downwards. The ſkin is free from ſcales.

When boiled, it has been obſerved to turn into a glutinous jelly, reſembling boiled ſtarch when cold, and ſerved the purpoſes of glue, on being tried on paper and leather.

* *Lib.* iv. *p.* 140.

There

There seems to be no satisfactory reason for the *English* name, yet to prevent confusion from the multiplication of titles, we chuse to retain that it has been so long known by; but care must be taken not to confound it with the sun-fish of the *Irish*, which differs in all respects from this*.

II. The SHORT SUN-FISH.

Orthragoriscus sive Luna piscis. *Rondel.* 424.

Mola *Salviani*, the Sun-fish. *Wil. Icth.* 151. *Raii syn. pisc.* 51.

Ostracion cathetoplateus subrotundus inermis asper, pinnis pectoralibus horizontalibus, foraminibus quatuor in capite. *Arted. synon.* 83.

Tetraodon mola. T. lævis, compressus, cauda truncata, pinna breviſſima dorsali analique annexa. *Lin. syst.* 412. *Gronov. Zooph. No.* 186.

Sun-fish, from Loo. *Borlase Cornwall.* 267. *tab.* 26. *fig.* 6.

THIS differs from the former in being much shorter and deeper. The back and the anal fins are higher, and the aperture to the gills not semilunar, but oval. The situation of the fins are the same in both.

This species was taken off *Penzance*, and is engraved in Doctor *Borlase*'s Natural History of *Cornwall*, from one of Mr. *Jago*'s drawings. Both kinds are taken on the western coasts of this kingdom, but in much greater numbers in the warmer parts of *Europe*.

* *Vide p.* 78.

Genus

Genus X. Thick body, arched back.
Ventral fins united.
Four branchioſtegous rays.

LUMP FISH.

Lumpus anglorum. *Geſner Paralip.* 25.
Seehaeſs, Haffpodde. *Schonevelde.* 41.
Lump, or Sea-Owl, *Scotis* Cock paddle. *Wil. Icth.* 208. *Raii ſyn. piſc.* 77.
Cyclopterus. *Arted. ſynon.* 87. *Gronov. Zooph. No.* 197.
Cyclopterus Lumpus. C. corpore ſquamis oſſeis angulato. *Lin. ſyſt.* 414.
Sjurygg-fiſk, Stenbit, Quabbſu. *Faun. ſuec. No.* 320.

I. The LUMP FISH.

THIS ſingular fiſh encreaſes to the weight of four pounds, and the length of ſixteen inches: the ſhape of the body is like that of the bream, deep but very thick, and it ſwims edgeways. The back is ſharp and elevated, the belly flat.

The irides are of a cherry color; lips, mouth, and tongue, of a deeper red: the jaws lined with innumerable ſmall teeth; the tongue very thick; along the ridge of the back is a row of large bony tubercles; from above the eye to within a ſmall ſpace of the tail is another row; beneath that a third, commencing at the gills; and on each ſide the belly a fourth row, conſiſting of five tubercles like the other: the whole ſkin is rough, with ſmall tubercles. Deſcr.

On the lower part of the back is a thick knob, improperly called a fin, being deſtitute of ſpines; beneath that is the dorſal fin, of a browniſh hue, reaching within an inch of the tail: on the belly, juſt oppoſite, is another of the ſame form. The belly is of a bright crimſon color: the pectoral fins are large and broad, almoſt uniting at their baſe. Beneath theſe is the part by which it adheres to the rocks, &c. It conſiſts of an oval aperture, ſurrounded with a fleſhy muſcular and obtuſe ſoft ſubſtance, edged with ſmall threaded appendages, which concur as ſo many claſpers: tail and vent fins purple.

By means of this part it adheres with vaſt force to any thing it pleaſes. As a proof of its tenacity we have known, that on flinging a fiſh of this ſpecies juſt caught, into a pail of water, it fixed itſelf ſo firmly to the bottom, that on taking the fiſh by the tail, the whole pail by that means was lifted, tho' it held ſome gallons, and that without removing the fiſh from its hold.

Great numbers of theſe fiſh are found in the *Greenland* ſeas during the months of *April* and *May*, when they reſort near the ſhore to ſpawn. Their roe is remarkably large, which the *Greenlanders* boil to a pulp, and eat. They are extremely fat, which recommends them the more to the natives, who admire all oily food: they call them *Nipiſets*, or *Catfiſh*, and take quantities of them during the ſeaſon*.

This fiſh is ſometimes eaten in *England*, being ſtewed like carp, but is both flabby and inſipid.

* *Crantz's Hiſt. Greenland*, I. 96.

II. The

II. The SEA SNAIL.

Liparis? *Rondel.* 272. *Geſner piſc.* 483.
Liparis noſtras *Dunelm et Eborac.* Sea Snail. *Wil. Icth. App.* 17. *Raii ſyn. piſc.* 74. *Pet. Gaz. tab.* 51. *fig.* 5.
Liparis. *Arted. ſynon.* 117.
Cyclopterus Liparis. C. corpore nudo, pinnis dorſali anali caudalique unitis. *Linn. ſyſt.* 414.
Cyclogaſter. *Gronov. Zooph. No.* 198.

THE ſea ſnail takes its name from the ſoft and unctuous texture of its body, reſembling that of the land ſnail. It is almoſt tranſparent, and ſoon diſſolves and melts away.

It is found in the ſea near the mouths of great rivers.

The length is five inches: the color when freſh taken a pale brown: the ſhape of the body round, but near the tail compreſſed ſideways: the belly is white, and very protuberant. Deſcr.

The head is large, thick, and round. There are no teeth in the mouth, but the jaws are very rough: the tongue very large.

The orifice to the gills is very ſmall.

The pectoral fins are very broad, thin, and tranſparent, and almoſt unite under the throat. The firſt ray next the throat is very long, extends far beyond the reſt, and is as fine as a hair. Over the baſe of each is a ſort of operculum, or lid, ending in a point: this is capable of being raiſed or depreſſed at pleaſure.

Behind the head begins the dorſal fin, which extends quite to the end of the tail: the ventral fin begins at the anus, and unites with the other at the tail.

Beneath the throat is a round depreſſion of a whitiſh color, like the impreſſion of a ſeal, ſurrounded by twelve ſmall pale yellow tubera, by which it is probable it adheres to the ſtones like the other ſpecies.

Genus XI. Noſe long and tubular.
No orifice to the gills:
The breathing aperture on the hind part of the head.
No ventral fins.
The body covered with a ſtrong cruſt. PIPE FISH.

I. The LONGER PIPE FISH.

Acus *Ariſtotelis* caudâ ſerpentinâ. *Sib. Scot.* 24. *tab.* 19.
Typhle altera. *Geſner piſc.* 1025.
Syngnathus corpore quadrangulo, pinnâ caudæ carens? *Arted. Spec.* 3.
Syngnathus barbatus. S. pinnis caudæ anique nullis, corpore ſexangulato? *Lin. ſyſt.* 417.

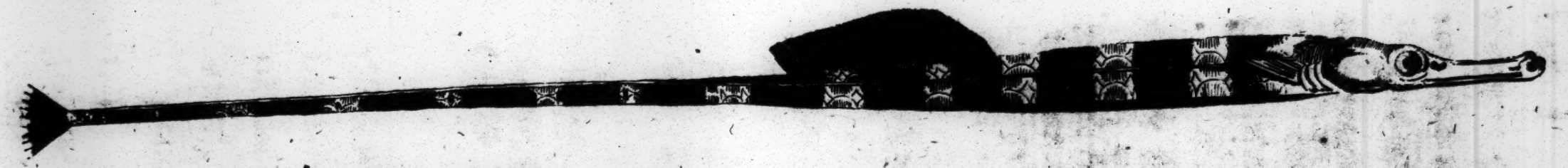
THIS ſpecies, deſcribed by Sir *Robert Sibbald*, was two feet in length; that we examined only ſixteen inches.

The noſe was an inch long, compreſſed ſideways, and the end of the lower mandible turned up: the aperture of the mouth was very ſmall.

The

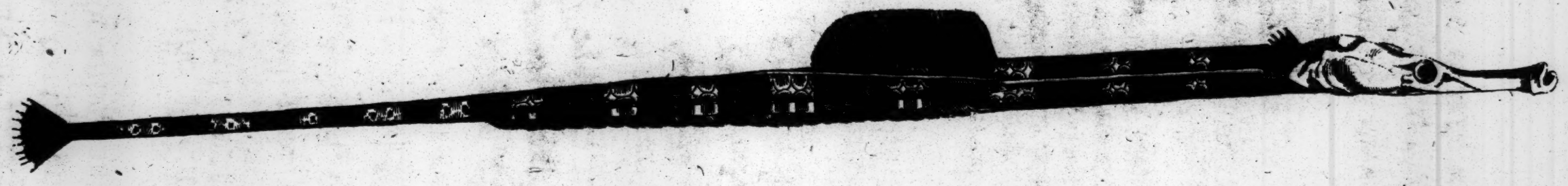
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Syn.

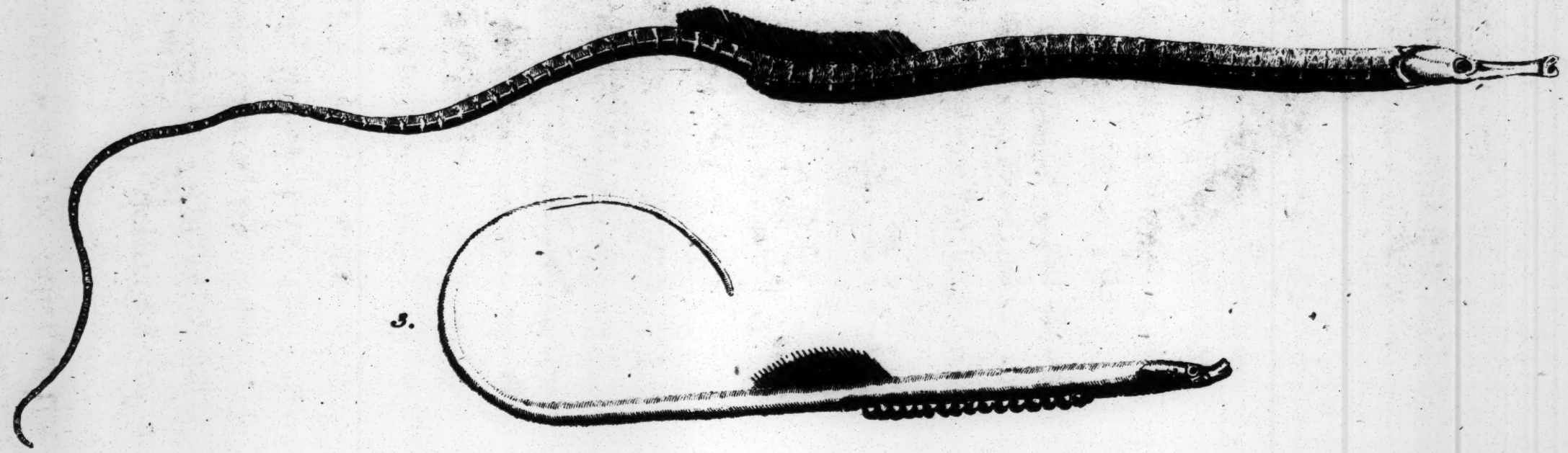


PIPE FISH.

1.



2.



3.

The irides were red; behind each eye was a deep brown line.

The body, in the thickeſt part, was about equal to a ſwan's quil, and angular; but the angles not being very ſharp, they were not eaſily ſeen till the fiſh was dried: the belly was ſlightly carinated, and marked along the middle with a duſky line.

The general color of the fiſh was an olive brown: the ſides marked with numbers of bluiſh lines pointing from the back to the belly, which, in dried fiſh, ſeemed like the ſigns of ſo many joints. Thoſe in a freſh ſubject ceaſed beyond the vent; all beyond that was ſpotted with brown.

The dorſal fin was narrow and thin, conſiſting of thirty-eight rays, was two inches long, and placed rather nearer to the head than the tail.

The vent was ſeven inches from the tip of the noſe; the body to that orifice was of an equal thickneſs, but from thence tapered to a very ſmall point, having no mark of a fin.

The pectoral fins were alſo wanting; in ſhort, all except the back fin.

When this fiſh and the next ſpecies are dried, they appear covered with numbers of angular cruſts, finely radiated from their centre.

They are viviparous; for on cruſhing one that was juſt taken, hundreds of very minute ones were obſerved to crawl about.

As we want a generical name in our language for this genus, we call it the *Pipe Fiſh*, from its ſlender body.

II. The SHORTER PIPE FISH.

L'Orueul marin. *Belon.* 446.
Acus ſecunda ſpecies, ſive, acus *Ariſtotelis. Rondel.* 229.
Typhle. *Geſner piſc.* 1025.
Trummeter, Meherſchlange. *Schonevelde,* 11.
Acus *Ariſtotelis* ſeu ſecunda. *Wil. Icth.* 158. *Raii ſyn. piſc.* 47.
Syngnathus corpore medio heptagono, caudâ pinnatâ. *Arted. ſynon.* 2.
Syngnathus acus. S. pinnis caudæ ani pectoralibuſque radiatis, corpore ſeptem-angulato. *Lin. ſyſt.* 416.
Kantnahl. *Faun. ſuec. No.* 376.
Syngnathus cauda pinnata. *Gronov. Zooph. No.* 172.
Sea-adder. *Borlaſe Cornw.* 267.

THIS is ſhorter and thicker than the former, not exceeding twelve inches in length. The middle of the body in ſome is hexangular, in others heptangular. *Linnæus* conſtitutes two ſpecies of them, his *Syngnathus Typhle*, and his *Syngnathus Acus*; but we join with Doctor *Gronovius*, in thinking them only varieties of the ſame fiſh.

The mouth is formed like that of the former: the irides are yellow: cloſe behind the head are the pectoral fins, which are ſmall and ſhort.

On the lower part of the back is one narrow fin; beyond the vent the tail commences, which is long and quadrangular.

At the extremity is a fin round and radiated.

The body is covered with a ſtrong cruſt, elegantly divided into ſmall compartments.

The belly is white; the other parts brown.

Beſides theſe ſpecies of hard-ſkinned Pipe fiſh, we have been informed, that the *Syngnathus Hippocampus* of *Linnæus*, or what the *Engliſh* improperly call the ſea horſe, has been found on the ſouthern ſhores of this kingdom.

III. The

III. The LITTLE PIPE FISH.

Acui *Ariſtotelis* congener piſciculus, pueris cornubienſibus *Sea Adder*, Acus Lumbriciformis, aut Serpentinus. *Wil. Icth.* 160. *Raii ſyn. piſc.*

Syngnathus teres, pinnis pectoralibus caudaque carens. *Arted. ſynon.* 2.

Syngnathus ophidion. *Lin. ſyſt.* 417.

Hafsnahl, Tangſnipa. *Faun. ſuec. No.* 375.

THE little pipe fiſh ſeldom exceeds five inches in length, is very ſlender, and tapers off to a point. It wants both the pectoral and tail fins; is covered with a ſmooth ſkin, not with a cruſt as the two former kinds are.

The noſe is ſhort and turns a little up; the eyes prominent.

On the back is one narrow fin.

This ſpecies is not viviparous: on the belly of the female is a long hollow, to which adhere the eggs, diſpoſed in two or three rows, are large, and not numerous.

Doctor *Gronovius* makes this ſynonymous with the fiſh deſcribed by Sir *Robert Sibbald*, poſſibly from not having an opportunity of comparing them. To ſhew their differences the more ſtrongly, we have cauſed both ſpecies to be engraved in the ſame plate, and alſo the two varieties of our ſecond ſpecies.

The ſynonym of *Serpent* is uſed in ſeveral languages to expreſs theſe fiſh: the *French* call one ſpecies *Orueul*, from a ſort of ſnake not unlike the blindworm: the *Germans* call it *Meberſchlange*; and the *Corniſh*, the ſea adder.

Div. III. BONY FISH.

Sect. I. APODAL.

Genus XII. Body, long, ſlender, and ſlippery.
Noſtrils tubular.
Back, ventral, and tail fins, united.
Aperture to the gills ſmall, and placed behind the pectoral fins.
Ten branchioſtegous rays. EEL.

I. The EEL.

Ἔγχελυς. *Ariſt. Hiſt. an. lib.* iv. *c.* 11. vi. 14. 16. *Oppian Halieut.* I. 516. iv. 450.
Anguilla *Plinii lib.* ix. *c.* 21.
L'Anguille. *Belon.* 291. *Obſ.* 55.
Anguilla. *Rondel. fluv.* 198. *Geſner piſc.* 40.
Ael. *Schonevelde*, 14.
The Eel. *Wil. piſc.* 109. *Raii ſyn. piſc.* 37.
Muræna unicolor maxilla inferiore longiore. *Art ed. ſyn.* 39.
Muræna anguilla. *Lin. ſyſt.* 426. *Gronov. Zooph. No.* 166.
Ahl. *Faun. ſuec. No.* 301. Aal. *Kram.* 387.

THE eel is a very ſingular fiſh in ſeveral things that relate to its natural hiſtory, and in ſome reſpects borders on the nature of the reptile tribe.

It is known to quit its element, and during night to wander along the meadows, not only for change

change of habitation, but alſo for the ſake of prey, feeding on the ſnails it finds in its paſſage.

During winter it beds itſelf deep in the mud, and continues in a ſtate of reſt like the ſerpent kind. It is very impatient of cold, and will eagerly take ſhelter in a whiſp of ſtraw flung into a pond in ſevere weather, which has ſometimes been practiſed as a method of taking them. *Albertus** goes ſo far as to ſay, that he has known eels to take ſhelter in a hay-rick, yet all periſhed thro' exceſs of cold.

It has been obſerved, that in the river *Nyne*** there is a variety of ſmall eel, with a leſſer head and narrower mouth than the common kind, that is found in cluſters in the bottom of the river, and is called the *Bed-eel:* theſe are ſometimes rouzed up by violent floods, and are never found at that time with meat in their ſtomachs. This bears ſuch an analogy with the cluſtering of blindworms in their quieſcent ſtate, that we cannot but conſider it as a further proof of a partial agreement in the nature of the two genera.

Generation. The antients adopted a moſt wild opinion about the generation of theſe fiſh, believing them to be either created from the mud, or that the ſcrapings of their bodies which they left on the ſtones, were animated and became young eels. Some moderns gave into theſe opinions, and into others that were equally extravagant. They could not account for

* *Geſner piſc.* 45.

** *Morton*'s *Hiſt. Northampt.* 419. *Pliny* obſerves, that the eels of the lake *Benacus* collect together in the ſame manner in the month of *October*, poſſibly to retreat from the winter's cold. *lib.* ix. *c.* 22.

the

the appearance of theſe fiſh in ponds that never were ſtocked with them, and that were even ſo remote as to make their being met with in ſuch places a phænomenon that they could not ſolve. But there is much reaſon to believe, that many waters are ſupplied with theſe fiſh by the aquatic fowl of prey, in the ſame manner as vegetation is ſpread by many of the land birds, either by being dropped as they carry them to feed their young, or by paſſing quick thro' their bodies, as is the caſe with herons; and ſuch may be occaſion of the appearance of theſe fiſh in places where they were never ſeen before. As to their immediate generation, it has been ſufficiently proved to be effected in the ordinary courſe of nature, and that they are viviparous. Vivipa-rous.

They are extremely voracious, and very deſtructive to the fry of fiſh.

No fiſh lives ſo long out of water as the eel: it is extremely tenacious of life, as its parts will move a conſiderable time after they are flayed and cut into pieces.

The eel is placed by *Linnæus* in the genus of *Muræna*, his firſt of the apodal fiſh, or ſuch which want the ventral fins. Deſcr.

The eyes are placed not remote from the end of the noſe: the irides are tinged with red: the under jaw is longer than the upper: the teeth are ſmall, ſharp, and numerous: beneath each eye is a minute orifice: at the end of the noſe two others, ſmall and tubular.

This

This fiſh is furniſhed with a pair of pectoral fins, rounded at their ends. Another narrow fin on the back, uniting with that of the tail; and the anal fin joins it in the ſame manner beneath.

Behind the pectoral fins is the orifice to the gills, which are concealed in the ſkin.

Silver Eels. Eels vary much in their colors, from a ſooty hue to a light olive green; and thoſe which are called ſilver eels, have their bellies white, and a remarkable clearneſs throughout.

Grigs. Beſides theſe there is another variety of this fiſh known in the *Thames* by the name of *Grigs*, and about *Oxford* by that of *Grigs* or *Gluts*. Theſe are ſcarce ever ſeen near *Oxford* in the winter, but appear in ſpring, and bite readily at the hook, which common eels in that neighborhood will not. They have a larger head, a blunter noſe, thicker ſkin, and leſs fat than the common ſort; neither are they ſo much eſteemed, nor do they often exceed three or four pounds in weight.

Common eels grow to a large ſize, ſometimes ſo great as to weigh fifteen or twenty pounds, but that is extremely rare. As to inſtances brought by *Dale* and others, of theſe fiſh encreaſing to a ſuperior magnitude, we have much reaſon to ſuſpect them to have been congers, ſince the enormous fiſh they deſcribe, have all been taken at the mouths of the *Thames* or *Medway*.

The eel is the moſt univerſal of fiſh, yet is ſcarce ever found in the *Danube*, tho' it is very common in the lakes and rivers of *Upper Auſtria*.

The

The *Romans* held this fiſh very cheap, probably from its likeneſs to a ſnake:

Vos anguilla manet longæ cognata colubræ *,
Vernula riparum pinguis torrente cloaca.

For you, is kept a ſink-fed ſnake-like eel.

On the contrary, the luxurious *Sybarites* were ſo fond of theſe fiſh, as to exempt from every kind of tribute the perſons who ſold them **.

II. The CONGER.

Κόγγρος. *Ariſt. Hiſt. an. lib.* I. &c.
Γόγγρος. *Oppian Halieut.* I. 113. 521.
Conger. *Ovidii Halieut.* 115. *Plinii lib.* ix. *c.* 16. 20.
Le Congre. *Belon.* 159.
Conger. *Rondel.* 394. *Geſner piſc.* 290.
The Conger, or Conger Eel. *Wil. Icth.* iii. *Raii ſyn. piſc.* 37.
Muræna ſupremo margine pinnæ dorſalis nigro. *Arted. ſynon.* 40.
Muræna Conger. M. roſtro tentaculis duobus, linea laterali ex punctis albida. *Lin. ſyſt.* 426.

THE conger grows to a vaſt ſize. Doctor *Borlaſe*, to whom we are obliged for ſeveral informations relating to this ſpecies, aſſure us, that they are ſometimes taken near *Mount's-Bay* of one hundred pounds weight †. Size.

They differ from the common eel in the following particulars: 1. Their color in general is more dark. 2. Their eyes much larger in proportion. Deſcr.

* *Juvenal. Sat.* v. 103. ** *Athenæus. lib.* xii. *p.* 521.
† We have heard of ſome taken near *Scarborough* that were ten feet and a half long, and eighteen inches in circumference in the thickeſt part.

3. The

3. The irides of a bright ſilvery color. 4. The lower jaw is rather ſhorter than the upper. 5. The ſide line is broad, whitiſh, and marked with a row of ſmall ſpots; Mr. *Ray* ſays a double row, but we did not obſerve it in the fiſh we examined. 6. The edges of the dorſal and anal fins are black. 7. They have more bones than the common eel, eſpecially along the back quite to the head. 8. They grow to a much larger ſize.

As to the diſtinction that Mr. *Ray*, and other writers, make of the ſmall beards at the end of the noſe, we think it not to be depended on, being ſometimes found in both kinds, and ſometimes entirely wanting.

We believe they generate like the freſh-water ſpecies: innumerable quantities, of what are ſuppoſed to be their fry, come up the *Severn* about the month of *April*, preceding the *Shads*, which it is conjectured migrate into that river to feed on them: they are called *Elvers*. They quite ſwarm during their ſeaſon, and are taken in a kind of ſieve made of hair-cloth, fixed to a long pole; the fiſherman ſtanding on the edge of the water during the tide, puts in his net as far as he can reach, and drawing it out again takes multitudes at every ſweep, and will take as many during one tide as will fill a buſhel. They are dreſſed, and reckoned very delicate.

Elvers.

Congers are extremely voracious, preying on other fiſh, and on crabs at the time they have loſt their ſhell, and are in a ſoft ſtate. They and eels in general are alſo particularly fond of carcaſſes of any kind,

kind, being frequently found lodged in ſuch that are accidentally taken up.

Theſe fiſh are an article of commerce in *Cornwall*; numbers are taken on that coaſt, and exported to *Spain* and *Portugal*, particularly to *Barcelona*. The quantities that were ſent from *Mount's-Bay* for five years, are as follow:

	Cwt.	*qr.*	*lb.*
1756	46	0	13
1757	164	0	21
1758	164	1	3
1759	213	0	3
1760	71	3	0

Some are taken by a ſingle hook and line, but (becauſe that way is tedious, and does not anſwer the expence of time and labor) they are chiefly caught by *Bulters*, which are ſtrong lines five hundred feet long, with ſixty hooks, each eight feet aſunder, baited with pilchards or mackrel: the *Bulters* are ſunk to the ground by a ſtone faſtened to them: ſometimes ſuch a number of theſe are tied together as to reach a mile. Capture.

We have been told that the fiſhermen are very fearful of a large conger, leaſt it ſhould endanger their legs by clinging round them; they therefore kill them as ſoon as poſſible by ſtriking them on the navel.

They are afterwards cured in this manner: they are ſlit, and hung on a frame till they dry, having a conſiderable quantity of fat, which it is neceſſary Cure.

ſhould

ſhould exude before they are fit for uſe. It is remarkable that a conger of a hundred weight will waſte by drying to twenty-four pounds; the people therefore prefer the ſmalleſt, poſſibly becauſe they are ſooneſt cured. During the proceſs there is a conſiderable ſtench; and it is ſaid that in the fiſhing villages the poultry are fed with the maggots that drop from the fiſh.

The *Portugueſe* and *Spaniards* uſe thoſe dried congers after they have been ground into a powder, to thicken and give a reliſh to their ſoups. We think they are ſold for about forty ſhillings the quintal, which weighs one hundred and twenty-ſix pounds.

BL



J. Mazell Del. et Sculp.

Genus XIII. Blunt head: long body.
One dorſal fin reaching
almoſt from the head to tail.
Fore teeth, conic and large.
Grinders flat and round.

WOLF FISH.

I. The WOLF FISH.

Anarrhichas. *Geſner Paralip.* 4.
Lupus marinus *Caii opuſc.* 113.
Lupus marinus noſtras, quem *incolæ* Wolff. *Schonevelde* 45. *tab.* 5.
Cat-Fiſh. *Sib. Scot.* iii. 25. *tab.* 16.
Wolf Fiſh, Sea Wolf, or Woof. *Wil. Icth.* 130. *Raii ſyn. piſc.* 40.
Steen-bider. *Pontop. Norway.* ii. 151.
Kigutilik *i. e.* dentatus. *Crantz. Greenl.* I. 96.
Anarhichas. *Arted. ſynon.* 39.
Anarhichas Lupus. *Lin. ſyſt.* 430.
Zee Wolf. *Gronov. Muſ. No.* 44. *Zooph. No.* 400.

THIS fiſh ſeems to be confined to the northern parts of the globe. We find it in the ſeas of *Greenland*, in thoſe of *Iceland** and *Norway*, on the coaſts of *Scotland*, and of *Yorkſhire*, and laſtly, in that part of the *German* ocean, which waſhes the ſhores of *Holland*, the moſt ſouthern of its haunts we can with any certainty mention. Place.

It is a moſt ravenous and fierce fiſh, and when taken faſtens on any thing within its reach: the fiſhermen dreading its bite, endeavor as ſoon as poſſi-

* Where it is called *Steinbeiſſer. Schonevelde*, 45.

ble to beat out its fore teeth, and then kill it by ſtriking it behind the head. *Schonevelde* relates, that its bite is ſo hard that it will ſeize on an anchor, and leave the marks of its teeth in it; and the *Daniſh* and *German* names of *Steenbider* and *Steinbeiſſer*, expreſs the ſenſe of its great ſtrength, as if it was capable of cruſhing even ſtones with its jaws.

Food. It feeds almoſt entirely on cruſtaceous animals, and ſhell fiſh, ſuch as crabs, lobſters, prawns, muſcles, ſcollops, large whelks, &c. theſe it grinds to pieces with its teeth, and ſwallows with the leſſer ſhells. It does not appear they are diſſolved in the ſtomach, but are voided with the fœces, for which purpoſe the aperture of the anus is wider than in other fiſh of the ſame ſize.

It is full of roe in *February*, *March*, and *April*, and ſpawns in *May* and *June*.

This fiſh has ſo diſagreeable and horrid an appearance, that nobody at *Scarborough* except the fiſhermen will eat it, and they prefer it to holibut. They always before dreſſing take off the head and ſkin.

Size. The ſea wolf grows to a large ſize: thoſe on the *Yorkſhire* coaſt are ſometimes found of the length of four feet, and, according to Doctor *Gronovius*, have been taken near *Hitland* ſeven feet long, and even more. That which we examined was three feet two inches and an half from the tip of the noſe to the end of the tail: the length of the head was eight inches, from the gills to the vent, ten; from thence to the tip of the tail, twenty and one half.

The

The circumference of the head was ſeventeen inches, at the ſhoulders twenty, but near the tail only four and a half.

Its weight was twenty pounds and a quarter.

The head is a little flatted on the top: the noſe blunt; the noſtrils very ſmall; the eyes ſmall, and placed near the end of the noſe.

The teeth are very remarkable, and finely adapted to its way of life. The fore teeth are ſtrong, conical, diverging a little from each other, ſtand far out of the jaws, and are commonly ſix above, and the ſame below, tho' ſometimes there are only five in each jaw: theſe are ſupported within-ſide by a row of leſſer teeth, which makes the number in the upper jaw ſeventeen or eighteen, in the lower eleven or twelve. Teeth.

The ſides of the under jaw are convex inwards, which greatly adds to their ſtrength, and at the ſame time allows room for the large muſcles with which the head of this fiſh is furniſhed.

The *dentes molares*, or grinding teeth of the under jaw, are higher on the outer than the inner edges, which inclines their ſurfaces inward: they join to the canine teeth in that jaw, but in the upper are ſeparate from them.

In the centre are two rows of flat ſtrong teeth, fixed on an oblong baſis upon the bones of the palate and noſe.

Theſe and the other grinding teeth are often found foſſil, and in that ſtate called *Bufonites*, or *Toad-ſtones*: they were formerly much eſteemed for their

imaginary virtues, and were ſet in gold, and worn as rings.

The two bones that form the under jaw are united before by a looſe cartilage, which mechaniſm admitting of a motion from ſide to ſide, moſt evidently contributes to the deſign of the whole, *viz.* a facility of breaking, grinding, and comminuting its teſtaceous and cruſtaceous food.

The body is long, and a little compreſſed ſideways; the ſkin ſmooth and ſlippery: it wants the lateral line.

The pectoral fins conſiſt of eighteen rays, are five inches long, and ſeven and a quarter broad.

The dorſal fin extends from the hind part of the head almoſt to the tail; the rays in the freſh fiſh are not viſible.

The anal fin extends as far as the dorſal fin.

The tail is round at its end, and conſiſts of thirteen rays.

Color. The ſides, back, and fins, are of a livid lead color; the two firſt marked downwards wiith irregular obſcure duſky lines; theſe in different fiſh have different appearances.

We think ourſelves much indebted to Mr. *Travis*, Surgeon, at *Scarborough*, for his ingenious remarks on this fiſh, as well as on ſeveral others that frequent that coaſt, being a gentleman much ſkilled in icthyology, and extremely liberal in communicating his knowlege.

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B L

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Genus



MORRIS.

LAUNCE.

VIII.

Genus XIV. Head ſlender.
Body long and ſquare.
Upper lip doubled in.
Dorſal and anal fin reaching almoſt to the tail.
Seven branchioſtegous rays.

LAUNCE.

I. The LAUNCE.

Ammodytes piſcis, ut nos vocavimus pro *anglico* Sandilz. *Geſner Paralip.* 3.

Tobian, vel Tobias, Sandtſpiring. *Schonevelde*, 76.

Ammodytes. *Geſneri Wil. Icth.* 113.

Sand Eels, or Launces. *Raii ſyn. piſc* 38, 165.

Ammodytes. *Arted. ſynon.* 29.

Ammodytes Tobianus. *Lin. ſyſt.* 430.

Tobis. *Faun. ſuec.* 302. *Gronov. Zooph. No.* 404.

THE launce is found on moſt of our ſandy ſhores during ſome of the ſummer months: it conceals itſelf on the receſs of the tides beneath the ſand, in ſuch places where the water is left at the depth of about a foot, and are in ſome places dug out, in others drawn up by means of a hook contrived for that purpoſe. They are commonly uſed for baits for other fiſh, but they are alſo very delicate eating.

Theſe fiſh are found in the ſtomachs of the *Porpeſſe*, an argument that the laſt roots up the ſand with its noſe as hogs do the ground.

Size. They grow ſometimes the length of nine or ten inches: the females are longer and ſlender than the males.

The form of the body is ſquare, the ſides are rounded, and the angles not ſharp: it is nevertheleſs long and ſlender.

The head is ſmall and taper; the under jaw much longer than the upper: the upper jaw is moveable, capable of being protruded, ſo that when open the gape is very wide.

The irides are ſilvery.

The dorſal fin runs almoſt the whole length of the back, is very narrow, and conſiſts of fifty-eight rays: the pectoral fins ſmall, and have twelve: the anus is placed much nearer the tail than the head, is narrow, and extends almoſt to the former.

The tail is forked, but the lobes rounded at their extremities.

The color of the back is blue, varying with green: on each ſide the back is a narrow duſky line or two. The ſides and belly are ſilvery; the lateral line ſtrait.

Genus

Genus XV. Small head.
Body extremely thin, compreſſed ſideways.
No pectoral fins. MORRIS.

I. The MORRIS.

Leptocephalus. *Gronov. Zooph. No.* 409. *tab.* 13. *fig.* 3.

THIS ſpecies was diſcovered in the ſea near *Holyhead* by the late Mr. *William Morris*, and in memory of our worthy friend we have given it his name: on receiving it from Mr. *Morris*, we communicated it to that accurate Icthyologiſt Doctor *Laurence Theodore Gronovius*, of *Leyden*, who has deſcribed it in his *Zoophylacium*, under the title of *Leptocephalus*, or ſmall head.

Deſcr. The length was four inches; the head very ſmall; the body compreſſed ſideways, extremely thin, and almoſt tranſparent, about the tenth of an inch thick, and in the deepeſt part about one-third of an inch; towards the tail it grew more ſlender, and ended in a point; towards the head it ſloped down, the head lying far beneath the level of the back.

The eyes large; the teeth in both jaws very ſmall.

The lateral line ſtrait: the ſides marked with oblique ſtrokes, that met at the lateral line.

The aperture to the gills large.

It wanted the pectoral, ventral, and caudal fins: the dorsal fin was extremely low, and thin, extending the whole length of the back very near the tail. The anal fin was of the same delicacy, and extended to the same distance from the anus.

Genus XVI. The upper jaw extending to a great length, hard, slender, and pointed.
No teeth.
Eight branchiostegous rays.
Slender body. SWORD FISH.

I. The SWORD FISH.

Ξιφίας. *Arist. Hist. an. lib.* ii. *c.* 13. viii. *c.* 19. *Oppian. Halieut. lib.* ii. 462. iii. 442.
Xiphias. *Ovid. Halieut.* 97.
Xiphias, *i. e.* Gladius *Plinii lib.* xxxii. *c.* 2.*
L'Heron de mer, ou grand Espadaz. *Belon.* 102,
Xiphias. *Rondel.* 251.
Xiphias, *i. e.* Gladius piscis. *Gesner pisc.* 1049. *Caii opusc.* 104.
Schwert-fische. *Schonevelde*, 35.
Sword-fish. *Wil. Icth.* 161. *Raii syn. pisc.* 52.
Xiphias. *Arted. synon.* 47.
Xiphias Gladius. *Lin. syst.* 432.
Swerd-fisk. *Faun. suec. No.* 303.

THIS fish sometimes frequents our coasts, but is much more common in the *Mediterranean*
Place. sea, especially in the part that separates *Italy* from *Sicily*, which has been long celebrated for it: the promontory *Pelorus**, now *Capo di Faro*, was a place noted for the resort of the *Xiphias*, being possibly the station of the *speculatores*, or the persons who watched and gave notice of the approach of the fish.

* *Athenæus*, 314.

The

The antient method of taking them is particularly described by *Strabo**, and agrees exactly with that practised by the moderns. Capture.

A man ascends one of the cliffs that overhangs the sea: as soon as he spies the fish, he gives notice either by his voice or by signs of the course it takes. Another, that is stationed in a boat, climbs up the mast, and on seeing the sword fish, directs the rowers towards it. As soon as he thinks they are got within reach, he descends, and taking a spear in his hand, strikes it into the fish, which, after wearying itself with its agitation, is seized and drawn into the boat. It is much esteemed by the *Sicilians*, who buy it up eagerly, and at its first coming into season give about six-pence *English* per pound. The season lasts from *May* till *August* **. The antients used to cut this fish into pieces, and salt it, whence it was called *Tomus Thurianus* †, from *Thurii*, a town in the bay of *Tarentum*, where it was taken and cured.

Kircher, in his *Musurgia*, has preserved a strange incantation used by the *Sicilian* fishermen, at the capture of the *Pesce Spada*, as they call it, which is expressed in the following unintelligible jargon:

Mamassu di pajanu,
Paletta di pajanu,
Majussu di stignela,
Palettu di paenu pale,
Pale la stagnetta,
Mancuta stigneta,
Pro nastu, vardu, pressu da
Visu & da terra.

* *Lib.* I. *p.* 16.

** *Ray*'s *Travels*, I. 271.

† *Tomus Thurianus, quem alii* Xiphiam *vocant.* Plinii *lib.* xxxii. *c.* 11.

But this uſe of charmed words is not confined to *Sicily*; the *Iriſh* have their ſong at the taking of the razor ſhell; and the *Corniſh* theirs, at the taking of the whiſtle fiſh.

The ſword fiſh is ſaid to be very voracious, and that it is a great enemy to the Tunny, who (according to *Belon*) are as much terrified with it as ſheep are at the ſight of a wolf.

Ac durus Xiphias, *ictu non mitior enſis*;
Et pavidi magno fugientes agmine Thunni.
Ovid. Halieut. 97.

Sharp as a ſword the *Xiphias* does appear;
And crowds of flying *Tunnies* ſtruck with fear.

Size. It grows to a very large ſize; the head of one, with the pectoral fins, found on the ſhore near *Laugharn*, in *Caermarthenſhire*, alone weighing ſeventy-five pounds: the ſnout was three feet long, rough, and hard, but not hard enough to penetrate ſhips and ſink them, as *Pliny* pretends*.

Snout. The ſnout is the upper jaw, produced to a great length, and has ſome reſemblance to a ſword, from whence the name. It is compreſſed at the top and bottom, and ſharp at the point. The under jaw is four times as ſhort as the upper, but likewiſe ſharp pointed. The mouth is deſtitute of teeth.

The body is ſlender, thickeſt near the head, and growing leſs and leſs as it approaches the tail.

The ſkin is rough, but very thin: the color of the back is duſky, of the belly ſilvery.

* Xiphiam, *id eſt*, Gladium, *roſtro mucronato eſſe, ab hoc naves perfoſſas mergi in oceano.* Plin. *lib.* xxxii. *c.* 11.

The

The dorſal fin begins a little above the gills, and extends almoſt to the tail: it is higheſt at the beginning and the end, but very low in the middle: a little above the tail, on each ſide, the ſkin riſes and forms two triangular protuberances, not unlike the ſpurious fins of the tunny.

The pectoral fins are long, and of a ſcythe-like form, and their firſt rays the longeſt.

The anus is placed at the diſtance of one-third part of the body from the tail; beneath are two anal fins.

The tail is exactly of the ſhape of a creſcent.

Sect. II. JUGULAR.

Genus XVII. Upper lip doubled.
Eyes near each other.
Two breathing apertures on the hind part of the head.
First rays of the dorsal fin very long. DRAGONET.

I. The DRAGONET.

La tierce espece de Exocetus? *Belon.* 218.
Dracunculus. *Rondel.* 304.
Dracunculus, aranei species altera. *Gesner pisc.* 80.
Dragon fish. *Marten's Spitzberg.* 123.
Yellow Gurnard. *Phil. Trans. No.* 293.
Lyra Harvicensis. *Pet. Gaz. tab.* 22. *Dale Harwich.* 431.
Callionymus Lyra. C. dorsalis prioris radiis longitudine corporis. *Lin. syst.* 433. *Faun. suec. No.* 110.
Uranoscopus, *Gronov. Zooph. No.* 206.
Floy-fiske. *Pontop. Norway*, ii. iii.
Dracunculus marinus. *Borlase Cornwall.* 270. *Seb. Mus.* iii. 92. *tab.* 30. *fig.* 7.

Name. LINNÆUS has given this genus the name of *Callionymus*, a fish mentioned by several of the antients; but the notices they have left of it are so very slight, as to render it difficult to determine what species they intended. *Pliny makes it a synonym to the *Uranoscopus*, a fish frequent in the *Italian* seas, but very different from our *Dragonet*, a name we

* *Lib.* xxxii. *c.* 11.

have

have taken the liberty of forming, from the diminutive *Dracunculus*, a title given it by *Rondeletius*, and other authors. The *Engliſh* writers have called it the Yellow Gurnard, which having no one character of the *Gurnard* genus, we think ourſelves obliged to drop that name.

It is found as far north as *Spitzbergen*, and as far ſouth as the *Mediterranean* ſea, and is not unfrequent on the *Scarborough* coaſts. We have alſo received it from *Norway*, among ſeveral other curioſities which that honeſt well-meaning prelate, *Erich Pontoppidan**, made us a preſent of. Place.

This ſpecies grows to the length of ten or twelve inches: the body is ſlender, round, and ſmooth. Deſcr.

The head is large, and flat at the top; in the hind part are two orifices, thro' which it breathes, and alſo forces out the water it takes in at the mouth, in the ſame manner as the cetaceous fiſh.

The apertures to the gills are cloſed: on the end of the bones that cover them is a very ſingular trifurcated ſpine.

The eyes are large, and placed very near each other on the upper part of the head, ſo that they look upwards; for which reaſon it has been ranked among the *Uranoſcopi*: the pupils are of a rich ſapphirine blue, the irides of a fine yellow.

The upper jaw projects much farther than the lower: the mouth is very wide: the teeth are ſmall.

* Biſhop of *Bergen*. He was alſo vice-chancellor of the univerſity of *Copenhagen*, in which ſtation he died, *December* 20, 1764, aged 66, much reſpected by his countrymen.

The

The pectoral fins are round, and of a light-brown color; the ventral placed before them, are very broad, and conſiſt of five branched rays.

The firſt dorſal fin is very ſingular, the firſt ray being ſetaceous, and ſo long as to extend almoſt to the tail: thoſe of the ſecond dorſal fins are of a moderate length, except the laſt, which is produced far beyond the others.

The anus is placed about the middle of the belly; the anal fin is broad, and the laſt ray the longeſt. *Pontoppidan* calls this ſpecies the flying fiſh: whether it makes uſe of any of its fins to raiſe itſelf out of the water, as he was informed they did, we cannot pretend to ſay.

The tail is rounded and long, and conſiſts of ten rays.

Colors. The ſide line is ſtrait: the colors are yellow, blue, and white, and make a beautiful appearance when the fiſh has been juſt taken.

II. The LESSER DRAGONET.

Dracunculus. *Wil. Icth.* 136. *Raii syn. pisc.* 79.
Cottus pinna secunda dorsi alba. *Arted. synon.* 77.
Callionymus Dracunculus. C. dorsalis prioris radiis corpore brevioribus. *Lin. syst.* 434.

THIS species we received from Mr. *Travis*. Its length was only six inches and an half.

The head was compressed; the forehead sloped down to the nose, being not so level as that of the preceding.

The eyes large, and almost contiguous.

The mouth small; the teeth very minute.

Over the gills was a strong trifurcated broad spine.

The first dorsal fin had four rays; the first setaceous, extending a little higher than the others, the last very short: the two first rays and webs were yellow, the others black.

The second had ten soft rays, their ends extending beyond the webs, which were pellucid.

The pectoral fins consisted of twenty rays, and were ferruginous, spotted with a deeper cast of the same: the ventral fins consisted of five broad and much branched rays, like those of the first species.

The anal fin was white, and had ten rays; the tail had ten rays. In both species they are bifurcated at their ends, and the ray next the anal fin in both is very short.

In colors this is far inferior to the former, being of a dirty yellow, mixed with white and dusky spots; the belly is entirely white.

Genus XVIII. Lower jaw ſloping down.
Gill covers aculeated.
Six branchioſtegous rays.
Two dorſal fins.
Anus near the breaſt. WEEVER.

I. The WEEVER.

Δράκων? *Ariſt. Hiſt. an. lib.* viii. *c.* 13. *Ælian. Hiſt an. lib.* ii. *c.* 50. *Oppian. Halieut.* ii. 459.

Draco marinus *Plinii lib.* ix. *c.* 27. Draco, Dracunculus. *lib.* xxxii. *c.* 11. Araneus. *lib.* ix. *c.* 48.

La vive. *Belon.* 209.

Draco. *Rondel.* 300. *Geſner piſc.* 77. 78.

Peter-manniken, Schwert-fiſche. *Schonevelde.* 16.

The Weever. *Wil. Icth.* 238. *Raii ſyn. piſc.* 91.

Trachinus maxilla inferiore longiore, cirris deſtituta. *Arted. ſyn.* 71.

Trachinus Draco. *Lin. ſyſt.* 453. *Gronov. Zooph. No.* 274.

Farſing, Fiaſſing. *Faun. ſuec. No.* 305.

THE qualities of this fiſh were well known to the antients, who take notice of them without any exaggeration: the wounds inflicted by its ſpines are exceedingly painful, attended with a violent burning, and moſt pungent ſhooting, and ſometimes with an inflammation that will extend from the arm to the ſhoulder*.

It is a common notion that theſe ſymptoms proceed from ſomething more than the ſmall wound this fiſh is capable of inflicting; and that there is a venom infuſed into it, at leſt into ſuch as is made by

* It is probable that the malignity of the ſymptoms ariſes from the habit of body the perſon is in, or the part in which the wound is given.

the

the ſpines that form the firſt dorſal fin, which is dyed with black, and has a moſt ſuſpicious aſpect. The remedy uſed by a fiſherman in our neighbourhood is the ſea ſand, with which he rubs the place affected for a conſiderable time *.

This fiſh buries itſelf in the ſands, leaving only its noſe out, and if trod on immediately ſtrikes with great force; and we have ſeen them direct their blows with as much judgment as fighting cocks. Notwithſtanding this noxious property of the ſpines, it is exceeding good meat.

The *Engliſh* name ſeems to have no meaning, being corrupted from the *French*, *la vive*, ſo called as being capable of living long out of the water, according to the interpretation of *Belon*. Name.

It grows to the length of twelve inches, but is commonly found much leſs. Deſcr.

The irides are yellow: the under jaw is longer than the upper, and ſlopes very much towards the belly: the teeth are ſmall.

The back is ſtrait, the ſides flat, the belly prominent, the lateral line ſtrait: the covers of the gills are armed with a very ſtrong ſharp ſpine.

The firſt dorſal fin conſiſts of five very ſtrong ſharp ſpines, which, as well as the intervening membranes are tinged with black; this fin, when quieſcent, is lodged in a ſmall hollow.

The ſecond conſiſts of ſeveral ſoft rays, commences juſt at the end of the firſt, and continues

* In the *Univerſal Muſeum* for *November* 1765, is an inſtance of a perſon who was reduced to great danger by a wound from this fiſh, and who was cured by the application of ſweet oil, and taking *opium* and *venice treacle*.

almoſt to the tail. The pectoral fins are pretty broad and angular; the ventral fins ſmall.

The vent is placed remarkably forward, very near the throat: the anal fin extends from it to a ſmall diſtance from the tail, is a little hollowed in the middle, but not ſo much as to be called forked.

The ſides of this fiſh are marked lengthways with two or three dirty yellow lines, and tranſverſely by numbers of ſmall ones: the belly is ſilvery.

II. The LESSER WEEVER.

Araneus minor, ſeptentrionalibus *Anglis*, an Otter Pike. — *Raii ſyn. piſc.* 92. *Wil. Icth.* 289.

THIS is a ſpecies which Mr. *Ray* ſays he heard was found in the north of *England*, but that he was acquainted with it only by name.

Genus XIX. Head ſmooth.
Seven ſlender branchioſtegous rays.
Body oblong; ſcales deciduous.
All the fins covered with a common ſkin.
Ventral fins ſlender, and ending in a point.
Teeth in the jaws; and in the palate a ſeries of minute teeth cloſely ſet together. * COD FISH.

*

With three dorſal fins; the chin bearded.

I. The COMMON COD FISH.

La Morue. *Belon.* 121.
Molva. *Rondel.* 280.
Molva ſive morhua altera. *Geſner piſc.* 88.
Kablauw. *Schonevelde.* 18.
Aſellus major vulgaris. *Wil. Icth.* 165.
Cod-fiſh, or Keeling. *Raii ſyn. piſc.* 53.
Gadus dorſo tripterygio, ore cirrato, cauda æquali fere cum radio primo ſpinoſo. *Arted. ſynon.* 35.
Gadus morhua. *Lin. ſyſt.* 436. *Gronov. Zooph. No.* 319.
Cabblia. *Faun. ſuec. No.* 398.

THIS fiſh is found only in the northern part of the world; it is, as *Rondeletius* calls it, an ocean fiſh, and never met with in the *Mediterranean* ſea *. It affects cold climates, and ſeems confined

* None (ſays Captain *Armſtrong* in his Hiſtory of *Minorca*) of the *Aſelli* or cod fiſh kind, frequent our ſhores, *p.* 163.

between the latitudes 66 and 50: what are caught north and ſouth of thoſe degrees being either few in quantity, or bad in quality. The *Greenland* fiſh are ſmall and emaciated thro' want of food, being very voracious, and having in thoſe ſeas a dearth of proviſion.

This locality of ſituation is common to many other ſpecies of this genus, moſt of them being inhabitants of the cold ſeas, or ſuch that lie within zones that can juſt clame the title of temperate. There are nevertheleſs certain ſpecies found near the *Canary Iſlands*, called *Cherny**, of which we know no more than the name; but according to the unfortunate Captain *Glas*, are better taſted than the *Newfoundland* kind.

The great rendezvouz of the cod fiſh is on the Banks of *Newfoundland*, and the other ſand banks that lie off the coaſts of *Cape Breton*, *Nova Scotia*, and *New England*. They prefer thoſe ſituations, by reaſon of the quantity of worms produced in thoſe ſandy bottoms, which tempt them to reſort there for food: but another cauſe of the particular attachment the fiſh have to theſe ſpots, is their vicinity to the polar ſeas, where they return to ſpawn; there they depoſe their roes in full ſecurity, but want of food forces them, as ſoon as the firſt more ſouthern ſeas are open, to repair thither for ſubſiſtence.

Few are taken north of *Iceland*, but on the ſouth and weſt coaſts they abound: they are again found to ſwarm on the coaſts of *Norway*, in the *Baltic*, off the *Orkney* and the *Weſtern Iſles*; after which their

* *Hiſt. Canary Iſlands*, 198.

numbers

numbers decreaſe, in proportion as they advance towards the ſouth, when they ſeem quite to ceaſe before they reach the mouth of the Straits of *Gibraltar*.

Before the diſcovery of *Newfoundland*, the greater fiſheries of cod were in the ſeas of *Iceland*, and of our *Weſtern Iſles*, which were the grand reſort of ſhips of all the commercial nations; but it ſeems that the greateſt plenty was met with near *Iceland*; for we find Queen *Elizabeth* condeſcending to aſk permiſſion to fiſh in thoſe ſeas from *Chriſtian* the IVth. of *Denmark*, yet afterwards ſhe ſo far repented her requeſt, as to inſtruct her embaſſadors to that court, to inſiſt on the right of a free and univerſal fiſhery *.

But the *Spaniſh*, the *French*, and the *Britons*, had much the advantage of us in all fiſheries at the beginning, as appears by the ſtate of that in the ſeas of *Newfoundland* in the year 1578 **, when the number of ſhips belonging to each nation ſtood thus:

Spaniards, 100, beſides 20 or 30 that came from *Biſcaie*, to take whale for train, being about five or ſix thouſand tons.
Portugueſe, 50, or three thouſand tons.
French and *Britons*, 150, or ſeven thouſand tons.
Engliſh, from 30 to 50.

But Mr. *Anderſon*, in his Dictionary of Commerce, I. 363, ſays, that the *French* began to fiſh there ſo

* *Rymer*'s *Fœd.* xvi. 275, 425.
** *Hackluyt*'s *Coll. Voy.* iii. 132.

early as 1536; and we think we have ſomewhere read, that their firſt pretence for fiſhing for cod in thoſe ſeas, was only to ſupply an *Engliſh* convent with that article.

The encreaſe of ſhipping that reſort to thoſe fertile banks, are now unſpeakable: our own country ſtill enjoys the greateſt ſhare, which ought to be eſteemed our chiefeſt treaſure, as it brings wealth to individuals, and ſtrength to the ſtate.

All this immenſe fiſhery is carried on by the hook and line only*; the bait is herring, a ſmall fiſh called a *Capelin*, a ſhell fiſh called *Clams*, and bits of ſea fowl; and with theſe are caught fiſh ſufficient to find employ for near fifteen thouſand *Britiſh* ſeamen, and to afford ſubſiſtence to a much more numerous body of people at home, who are engaged in the various manufactures which ſo vaſt a fiſhery demands.

Food. The food of the cod is either ſmall fiſh, worms, teſtaceous, or cruſtaceous animals, ſuch as crabs, large whelks, &c. and their digeſtion is ſo powerful, as to diſſolve the greateſt part of the ſhells they ſwallow. They are very voracious, and catch at any ſmall body they perceive moved by the water, even ſtones and pebbles, which are often found in their ſtomachs.

Vaſtly prolific. Providence hath kindly ordained that this fiſh, ſo uſeful to mankind, ſhould be ſo very prolific as to

* We have been informed that they fiſh in the depth of from fifteen to ſixty fathoms, according to the inequality of the *Bank*, which is repreſented as a vaſt mountain under water above five hundred miles long, and near three hundred broad, and that ſeamen knew when they approach it by the great ſwell of the ſea, and the thick miſts that impend over it.

ſupply

ſupply more than the deficiencies of the multitudes annually taken. *Leuwenhoek* counted nine millions three hundred and eighty-four thouſand eggs in a cod fiſh of a middling ſize, a number ſure that will baffle all the efforts of man, or the voracity of the inhabitants of the ocean to exterminate, and which will ſecure to all ages an inexhauſtible ſupply of grateful proviſion.

In our ſeas they begin to ſpawn in *January*, and depoſite their eggs in rough ground, among rocks. Some continue in roe till the beginning of *April*. The cod fiſh in general recover quicker after ſpawning than any other fiſh, therefore it is common to take ſome good ones all the ſummer. When they are out of ſeaſon they are thin tailed and louſy, and the lice chiefly fix themſelves on the inſide of their mouths.

The fiſh of a middling ſize are moſt eſteemed for the table, and are choſen by their plumpneſs and roundneſs, eſpecially near the tail, by the depth of the ſulcus or pit behind the head, and by the regular undulated appearance of the ſides, as if they were ribbed. The glutinous parts about the head loſe their delicate flavor after it has been twenty-four hours out of the water, even in winter, in which theſe and other fiſh of this genus are in higheſt ſeaſon.

The largeſt that we ever heard of taken on our coaſts weighed ſixty-nine pounds, but the general weight on the *Yorkſhire* ſeas is from fourteen to forty. Size.

This ſpecies is ſhort in proportion to its bulk, the belly being very large and prominent. Deſcr.

The jaws are of an equal length, at the end of the lower is a small beard; the teeth are disposed in the palate as well as jaws.

The eyes are large.

On the back are three soft fins; the first has fourteen, the two last nineteen rays a-piece. The ventral fins are very slender, and consist but of six rays; the two first extending far beyond the others. It has two anal fins; the first consisting of twenty, the last of sixteen rays.

The tail is almost even at the end: the first ray on each side is short, and composed of a strong bone.

The color of this fish is cinereous on the back and sides, and commonly spotted with yellow: the belly is white, but they vary much, not only in color* but in shape, particularly that of the head.

Side line The side line is white and broad, strait, till it reaches opposite the vent, when it bends towards the tail.

* Codlings are often taken of a yellow, orange, and even red color, while they remain among the rocks, but on changing their place assume the color of other cod fish.

II. The

II. The TORSK.

Aſellus varius vel ſtriatus, Dorſch, Pamuchelen. *Schonevelde*, 19. *Wil. Icth.* 172. *Raii ſyn. piſc.* 54.

Gadus dorſo tripterygio, ore cirrato, colore vario, maxilla ſuperiore longiore, cauda æquali. *Arted. ſynon.* 35.

Gadus callarias: G. tripterygius, cifratus varius, cauda integra, maxilla ſuperiore longiore. *Lin. ſyſt.* 436.

Torſk. *Faun. ſuec. No.* 307.

THESE fiſh are found in great quantities in the *Baltic*, and the northern ſeas, particularly in *Braſſa Sound**, and about the *Orkney Iſles*, and are ſuppoſed never to wander into the more ſouthern ſeas.

It is a fiſh much eſteemed for its delicacy; the meat divides into flakes on being boiled, like that of a ſalmon: for which reaſon, as *Schonevelde* tells us, the *Germans* call it *Scheibendorſch*.

It never grows to a large ſize, the greateſt not exceeding thirty inches**.

The head is ſmall: the upper jaw is a little longer than the lower: in the firſt the teeth are diſpoſed in a ſingle row; in the upper in ſeveral. In the roof of the mouth is a rough triangular bone: at the end of the lower jaw is a ſmall beard.

Between the head and the firſt dorſal fin is a deep groove.

* Where it is called *Tuſk*. *Martin's Weſt. Iſles.* 385.

** We find this account of its length in the M. S. Journal of the late Biſhop of *Meath*, Doctor *Richard Pocock*; but we believe it is very ſeldom they are found ſo large.

The

The belly is a little prominent; the ſide line white, broad, placed nearer the back than the belly, and a little incurvated.

The dorſal fins are duſky, the two firſt ſpotted: the back, head, and ſides of a deep olive color, in ſome whitiſh, and marked with numerous yellow ſpots: the belly white.

The tail even at the end, and its rays ſoft.

III. The HADOCK.

Aigrefin, ou aiglefin. *Belon.* 118.
Tertia aſellorum ſpecies. *Rondel.* 277.
Tertia aſel. Sp. Eglefinus. *Geſner piſc.* 86.
Onos ſive aſinus veterum. *Turner epiſt. ad Geſner.*
Aſellus minor, Schelfiſch. *Schonevelde.* 18.
Hadock. *Wil. Icth.* 170. *Raii ſyn. piſc.* 55.
Gadus dorſo tripterygio, ore cirrato, max. ſup. longiore, corpore albicante, cauda parum bifurca. *Arted. ſynon.* 36.
Gadus Æglefinus. G. tripterygius cirratus albicans, cauda biloba. *Lin. ſyſt.* 435.
Kolja. *Faun. ſuec. No.* 306. *Gronov. Zooph. No.* 321.

Name. OUR countryman *Turner* conjectured this ſpecies to have been the Ονος, or *Aſinus*, of the antients, and *Belon*, that it was the Κριὸς, and the Πρόβατος of *Oppian*. We have carefully conſulted moſt of the antient naturaliſts, but cannot diſcover any marks by which we can determine the ſpecies they intended. The words *Ονος, **Aſinus, *Aſellus*, †*Callarias*, and *Bacchus*, are familiarly applied

* *Ariſt. Hiſt. an. lib.* viii. *c.* 15. *Oppian Halieut.* I. 151. iii. 191.
** *Ovidii Halieut. lin.* 131. *Plinii lib.* ix. *c.* 16. 17. † *Lib. c.* 17.

to ſeveral of our ſpecies of cod fiſh by the more modern writers; yet the antients from whom they are borrowed, have not authorized the application to any particular kind, either by deſcription or any other method.

Different reaſons have been aſſigned for giving the name of Ονος, or *Aſinus* to this genus, ſome imagining it to be from the color of the fiſh, others becauſe it uſed to be carried on the backs of aſſes to market; but we ſhall drop this uncertain ſubject, and proceed to what we have fuller aſſurance of.

Large hadocks begin to be in roe the middle of *November*, and continue ſo till the end of *January*; from that time till *May* they are very thin tailed, and much out of ſeaſon. In *May* they begin to recover, and ſome of the middling-ſized fiſh are then very good, and continue improving till the time of their greateſt perfection. The ſmall ones are extremely good from *May* till *February*, and ſome even in *February*, *March*, and *April*, viz. thoſe which are not old enough to breed. Seaſon.

The fiſhermen aſſert, that in rough weather hadocks ſink down into the ſand, and ooze in the bottom of the ſea, and ſhelter themſelves there till the ſtorm is over, becauſe in ſtormy weather they take none, and thoſe that are taken immediately after a ſtorm are covered with mud on their backs.

In ſummer they live on young herrings and other ſmall fiſh; in winter on the ſtone-coated worms*, which the fiſhermen call *hadock meat*. Food.

* A ſpecies of *Serpula*.

The

Vaſt ſhoals.

The grand ſhoal of hadocks comes periodically on the *Yorkſhire* coaſts. It is remarkable that they appeared in 1766 on the 10th of *December*, and exactly on the ſame day in 1767: theſe ſhoals extended from the ſhore near three miles in breadth, and in length from *Flamborough* head to *Tinmouth* caſtle, and perhaps much farther northwards. An idea may be given of their numbers by the following fact: three fiſhermen, within the diſtance of a mile from *Scarborough* harbour, frequently loaded their *coble* or boat with them twice a-day, taking each time about a ton of fiſh: when they put down their lines beyond the diſtance of three miles from the ſhore, they caught nothing but dog fiſh, which ſhows how exactly theſe fiſh keep their limits.

The beſt hadocks were ſold from eightpence to a ſhilling per ſcore, and the poor had the ſmaller ſort at a penny, and ſometimes a halfpenny per ſcore*.

The large hadocks quit the coaſt as ſoon as they go out of ſeaſon, and leave behind great plenty of ſmall ones. It is ſaid that the large ones viſit the coaſts of *Hamburgh* and *Jutland* in the ſummer.

It is no leſs remarkable than providential, that all kinds of fiſh (except mackrel) which frequent the *Yorkſhire* coaſt, approach the ſhore, and as if it were offer themſelves to us, generally remaining there as long as they are in high ſeaſon, and retire from us when they become unfit for uſe.

* Here Mr. *Travis*, to whom I am much obliged for a moſt accurate account of the *Yorkſhire* fiſh, with great humanity projects an inland navigation, to convey at a cheap and eaſy method, thoſe gifts of Providence to the thouſands of poor manufacturers who inhabit the diſtant parts of that vaſt county.

It

It is the commoneſt ſpecies in the *London* markets.

They do not grow to a great bulk, one of four- Defct.
teen pounds being of an uncommon ſize, but thoſe are extremely coarſe; the beſt for the table weighing from two to three pounds.

The body is long, and rather more ſlender than thoſe of the preceding kinds: the head ſlopes down to the noſe: the ſpace between the hind part of the firſt dorſal fin is ridged: on the chin is a ſhort beard.

On the back are three fins reſembling thoſe of the common cod fiſh: on each ſide beyond the gills is a large black ſpot. Superſtition aſſigns this mark to the impreſſion St. *Peter* left with his finger and thumb when he took the tribute out of the mouth of a fiſh of this ſpecies, which has been continued to the whole race of hadocks ever ſince that miracle.

The lateral line is black: the tail is forked.

The color of the upper part of this ſpecies is duſky or brown; the belly and lower part of the ſides ſilvery.

IV. The WHITING POUT.

Aſellus mollis latus. Mr. *Liſter apud Wil. Ieth. App.* 22.

Whiting Pout, *Londinenſibus. Raii ſyn. piſc.* 55.

Gadus dorſo tripterygio, ore cirrato, longitudine ad latitudinem tripla, pinna ani prima officulorum triginta. *Arted. ſynon.* 37.

Gadus barbatus. G. tripterygius cirratus maxilla inferiore punctis utrinque ſeptem. *Lin ſyſt.* 437. *Gronov. Zooph. No.* 320.

Sma-Torſk. *Faun. ſuec. No.* 311.

THIS ſpecies nevers grows to a large ſize, ſeldom exceeding a foot in length.

It is diſtinguiſhed from all others by its great depth; one of the ſize abovementioned being near four inches deep in the broadeſt part.

The back is very much arched; the mouth ſmall; the beard ſhort.

The firſt dorſal fin is triangular, and terminates in a long fibre: the color of the fins and tail black: at the bottom of the pectoral fins is a black ſpot.

The lateral line is white, broad, and crooked.

The tail is even at the end.

The color of the body is white, but more obſcure on the back than the belly.

This fiſh was firſt diſcovered by Doctor *Liſter*, and communicated by him, with ſeveral other ſpecies, to Mr. *Ray*.

V. The B I B.

Aſellus nanus, Dwergdorſch, Krumſtert ? *Schonevelde*, 20.

Bib & Blinds *Cornubienſibus. Wil. Icth* 169.

Aſellus luſcus. *Raii ſyn piſc.* 54.

Gadus dorſo tripterygio, ore cirrato, oſſiculo pinnarum ventralium primo in longam ſetam producto. *Arted. ſynon.* 35.

Gadus luſcus. *Lin. ſyſt.* 437.

THIS ſpecies is ſuppoſed by *Artedius* to be the ſame with the former; but ſince it does not appear that he had an opportunity of examining it, we ſhall depend on the judgment of Mr. *Ray*, who had ſeen both, and ſhall form a ſeparate article of it from his deſcription, as it has not yet fell in our way.

It grows to the length of one foot: the body is deep, and the ſides compreſſed: the ſcales larger than thoſe of the cod fiſh, and adhere to the ſkin: the eyes are covered with a looſe membrane, which it is ſaid the fiſh can at pleaſure blow up like a bladder. The mouth ſmall; the teeth diſpoſed like others of the kind: on the chin is a beard, which in grown fiſh is an inch long.

On the back are three fins; the firſt has twelve rays; the middle fin, which is the longeſt, has twenty-three; the laſt twenty.

The pectoral fins have about ſixteen rays; the ventral fins ſeven or eight, the firſt of which is very long and ſlender.

The

The vent is placed at the diſtance of only one-third the length of the whole fiſh from the tip of the noſe; behind the vent are two fins.

The tail is almoſt even at the end.

Color. The color of the back is light olive, or dirty yellow; the belly ſilvery.

It is eſteemed a good eating fiſh, not unlike the whiting in taſte.

VI. The POOR.

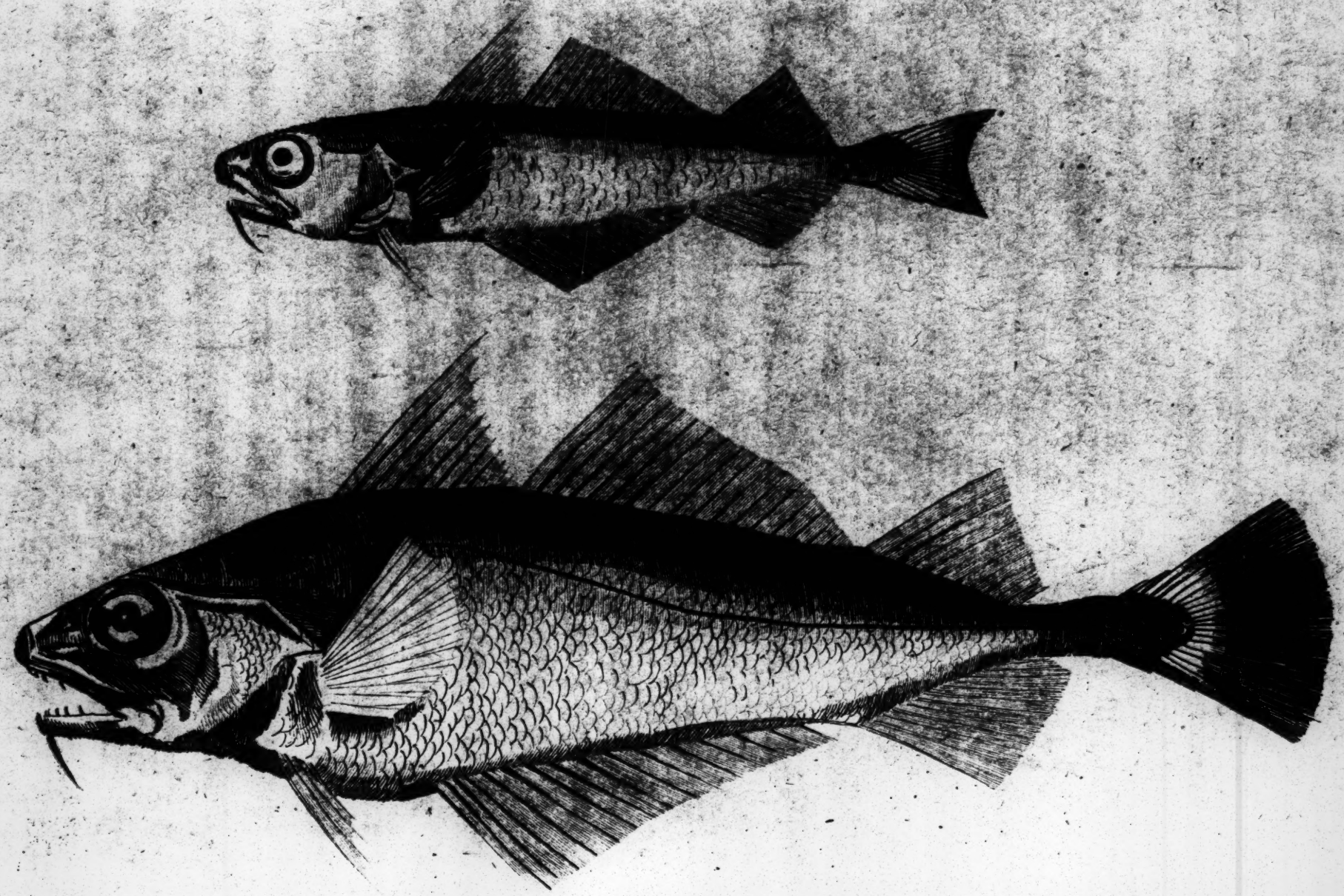
Le Merlan? *Belon.* 120.
Anthiæ ſecunda ſpecies. *Rondel.* 191. *Geſner piſc.* 56.
Aſellus mollis minor, ſeu aſellus omnium minimus. Mollo *Venetiis.* Capelan *Maſſiliæ.* *Wil. Icth.* 171.
Poor or Power *Cornub.* Mr. *Jago.* *Raii ſyn. piſc.* 163. *fig.* 6.
Gadus dorſo tripterygio, ore cirrato, corpore ſeſcunciali, ano in medio corporis. *Artedi. ſynon.* 36.
Gadus minutus. *Lin. ſyſt.* 438.

THIS is the only ſpecies of cod fiſh with three dorſal fins that we (at this time*) are aſſured is found in the *Mediterranean* ſea. It is taken near *Marſeilles*, and ſometimes in ſuch quantities as to become a perfect nuſance; for no other kinds of fiſh are taken during that time**. It is eſteemed a good fiſh, but is incapable of being ſalted or dried:

* Mr. *Ray*, who viſited the *Italian* and *Sicilian* ſeas, and was a moſt diligent obſerver, ſays he could diſcover no other kind; but it is with pleaſure we acquaint the reader, that our learned correſpondent Doctor *Gouan*, of *Montpellier*, will ſoon favor us with ample information on that head, it being the deſign of that able Naturaliſt ſoon to publiſh his *Icthyology*, which will doubtleſsly point out the fiſh of his own ſeas.

** *Rondel.* 191.

Belon



BIB.

BL

Belon says, that when it is dried in the sun, it grows as hard as horn; *C'est dela que les* ANGLOIS *l'ont nommé Bouclzs horn.*

It is the smallest species yet discovered, being little more than six inches long. Descr.

On the chin is a small beard: the eyes are covered with a loose membrane: on the gill-covers, and the jaws are on each side, nine punctures.

The first dorsal fin has twelve rays; the second nineteen; the third seventeen.

The pectoral fins thirteen; the ventral fins six: the first anal fin twenty-seven; the second seventeen.

The color on the back is a light brown; on the belly a dirty white.

We owe the discovery of this kind in our seas to the Rev. Mr. *Jago.*

**

Three dorsal fins: chin beardless.

VII. The COAL FISH.

Colfisch. *Belon.* 128.
Colfisch *Anglorum*, *Gesner pisc.* 89.
Asellus niger. Kolfisch, Koler. *Schonevelde*, 19.
Cole fish *Septentrionalium anglorum*. Rawlin Pollack *Cornubiensium*. *Wil. pisc.* 168. *Raii syn. pisc.* 54.
Gadus dorso tripterygio, ore imberbi, maxilla inferiore longiore et linea laterali recta. *Arted. synon.* 34.
Gadus carbonarius. *Lin. syst.* 438. *Gronov. Zooph. No.* 317.

THE coal fish takes its name from the black color that it sometimes assumes. *Belon* calls it the *Colfisch*, imagining it was so named by the *English*, from its producing the *Icthyocolla*, but *Gesner* gives the true etimology.

These fish are common on most of our rocky and deep coasts, but particularly those of the north of *Great Britain*.

Young. The young begin to appear on the *Yorkshire* coast the beginning of *July* in vast shoals, and are at that time about an inch and an half long. In *August* they are from three to five inches in length, and are taken in great numbers with the angling rod, and are then esteemed a very delicate fish, but grow so coarse when they are a year old that few people will eat them. Fish of that age are from eight to fifteen inches long, and begin to have a little black-

ness

neſs near the gills, and on the back, and the blackneſs encreaſes as they grow older.

The fry is known by different names in different places: they are called at *Scarborough* *Parrs*, and when a year old, *Billets*. About nine or ten years ago ſuch a glut of *Parrs* viſited that part, that for ſeveral weeks it was impoſſible to dip a pail into the ſea without taking ſome.

Tho' this fiſh is ſo little eſteemed when freſh, yet it is ſalted and dried for ſale; a perſon laſt year having cured above a thouſand at *Scarborough*.

The coal fiſh is of more elegant form than the cod fiſh: they generally grow to the length of two feet and an half, and weigh about twenty-eight or thirty pounds at moſt. The head is ſmall; the under jaw a little longer than the upper: the irides ſilvery, marked on one ſide with a black ſpot. Deſcr.

It has three dorſal fins, the firſt conſiſts of fourteen, the next of twenty, the laſt of twenty-two rays.

The pectoral fins of eighteen; the ventral of ſix: the firſt anal fin of twenty-two, the ſecond of nineteen.

The tail is broad and forked.

Theſe fiſh vary in color. We have ſeen ſome whoſe back, noſe, dorſal fins and tail were of a deep black: the gill covers ſilver and black: the ventral and anal fins white; the belly of the ſame color.

We have ſeen others duſky, others brown, but in all the lateral line was ſtrait and white, and the lower part of the ventral and anal fins white.

VIII. The POLLACK.

Aſellus vireſcens, Schwartres Kolmulen. *Schonevelde*, 20.
Aſellus flaveſcens; Gelbe Kolmulen. *Ibid.*
Aſellus Huitingo-Pollachius. *Wil. Icth.* 167.
Whiting Pollack. *Raii ſyn. piſc.* 53.
Gadus dorſo tripterygio, ore imberbi, max. inf. longiore, linea laterali curva. *Arted. ſynon.* 35.
Gadus Pollachius. *Lin. ſyſt.* 439. *Gronov. Zooph. No.* 318. *Norwegis* Scy. *Bahuſiis* Graſik? *Faun. ſuec. No.* 309.

THIS ſpecies is common on many of our rocky coaſts: during ſummer they are ſeen in great ſhoals frolicking on the ſurface of the water, and flinging themſelves into a thouſand forms. They are at that time ſo wanton as to bite at any thing that appears on the top of the waves, and are often taken with a gooſe's feather fixed to the hook. They are a very ſtrong fiſh, being obſerved to keep their ſtation at the feet of the rocks in the moſt turbulent and rapid ſea.

They are a good eating fiſh: they do not grow to a very large ſize; at leſt the biggeſt we have ſeen not exceeding ſix or ſeven pounds: but we have heard of ſome that were taken in the ſea near *Scarborough*, which they frequent during winter, that weighed near twenty-eight pounds.

The under jaw is longer than the upper; the head and body riſes pretty high, as far as the firſt dorſal fin.

The ſide line is incurvated, riſing towards the middle of the back, then ſinking and running ſtrait to the tail; it is broad, and a brown color.

The

The firſt dorſal fin has eleven rays, the middle nineteen, the laſt ſixteen: the tail is a little forked.

The color of the back is duſky, of ſome inclining to green: the ſides beneath the lateral line marked with lines of yellow; the belly white.

IX. The WHITING.

Secunda aſellorum ſpecies. *Rondel.* 276.
Merlanus. *Rondel. Geſner piſc.* 85.
Aſellus candidus primus, Witling. *Schonevelde*, 17.
Aſellus mollis major, ſeu albus. *Wil. Icth.* 170.
Whiting. *Raii ſyn. piſc.* 55.
Gadus dorſo tripterygio, ore imberbi corpore albo, maxilla ſuperiore longiore. *Arted. ſynon.* 34.
Gadus merlangus. *Lin. ſyſt.* 438. *Gronov. Zooph. No.* 316.
Hwitling, Widding. *Faun ſuec. No.* 310.

WHITINGS appear in vaſt ſhoals on our ſeas in the ſpring, keeping at the diſtance of about half a mile to that of three from the ſhore. They are caught in vaſt numbers by the line, and afford excellent diverſion.

They are the moſt delicate as well as the moſt wholeſome of any of the genus, but do not grow to a large ſize; the biggeſt we ever ſaw * not exceeding twenty inches, but that is very uncommon, the uſual length being ten or twelve.

It is a fiſh of an elegant make: the upper jaw is the longeſt; the eyes large, the noſe ſharp, the teeth of the upper jaw long, and appear over the lower when cloſed.

* We have been informed that whitings, from four to eight pounds in weight, have been taken in the deep water at the edge of the *Dogger-Bank*.

The first dorsal fin has fifteen rays, the second eighteen, the last twenty.

The color of the head and back is a pale brown; the lateral line white, and is crooked; the belly and sides silvery; the last streaked lengthways with yellow.

* *
*

With only two dorsal fins.

X. The HAKE.

Le Merluz. *Belon.* 115.
Asellus, ὄνος, ὀνισχος. *Rondel.* 272.
Merlucius. *Gesner pisc.* 84.
Asellus primus sive Merlucius. *Wil. Icth.* 174.
The Hake. *Raii syn. pisc.*
Gadus dorso dipterygio, maxilla inferiore longiore. *Arted. synon.* 36.
Gadus Merlucius. *Lin. syst.* 439. *Faun. suec. No.* 314. *Gronov. Zooph. No.* 315.

A FISH that is found in vast abundance on many of our coasts, and of those of *Ireland*. There was formerly a vast stationary fishery of *Hake* on the *Nymph Bank* off the coast of *Waterford*, immense quantities appearing there twice a year; the first shoal coming in *June*, during the *Mackrel* season, the other in *September*, at the beginning of the *Herring* season, probably in pursuit of those fish: it was no unusual thing for six men with hooks and lines to take a thousand *Hake* in one night, besides a considerable quantity of other fish. These were salted and sent to *Spain*, particularly to *Bilboa*. * We are

* *Smith's Hist. Watetford*, 261.

at

at this time uninformed of the ſtate of this fiſhery, but find that Mr. *Smith*, who wrote the Hiſtory of the County of *Waterford*, complain even in his time (1746) of its decline. Many of the gregarious fiſh are ſubject to change their ſituations, and deſert their haunts for numbers of years, and then return again. We ſee p. 78, how unſettled the *Baſking Shark* appears to be. Mr. *Smith* inſtances the loſs of the *Hadock* on the *Waterford* ſhores, where they uſed to ſwarm; and to our own knowledge we can bring the capriciouſneſs of the herrings, which ſo frequently quit their ſtations, as another example.

Sometimes the irregular migration of fiſh is owing to their being followed and haraſſed by an unuſual number of fiſh of prey, ſuch as the ſhark kind.

Sometimes to deficiency of the ſmaller fiſh, which ſerved them as food.

And laſtly, in many places to the cuſtom of trawling, which not only demoliſhes a quantity of their ſpawn, which is depoſited in the ſand, but alſo deſtroys or drives into deeper waters numberleſs worms and inſects, the repaſt of many fiſh.

The hake is in *England* eſteemed a very coarſe fiſh, and is ſeldom admitted to table either freſh or ſalted *.

Theſe fiſh are from a foot and an half to near twice that length: they are of a ſlender make, of a pale aſh color on their backs, and of a dirty white on their bellies. Deſcr.

* When cured it is known by the name of *Poor John*.

Their head is flat and broad; the mouth very wide; the teeth very long and sharp, particularly those of the lower jaw.

The first dorsal fin is small, consisting of nine rays; the second reaches from the base of the former almost to the tail, and is composed of forty rays, of which the last are the highest: the pectoral fins have about twelve, the ventral seven: the anal thirty-nine.

The tail is almost even at the end.

XI. The LESSER HAKE.

Galee, claria marina. *Belon.* 126.
Tinca marina. *Aldr. Wil. Ich.* 205. *Raii syn. pisc.* 75.
Phycis. *Rondel.* 186. *pisc.* 718. *Gesner*
Phycis. *Arted. synon. App.* iii.
Blennius Phycis. *Lin. syst.* 442.

THIS is the fish to which *Rondeletius* gives the name of *Phycis*, borrowing it from *Aristotle* and *Pliny*, who have not so sufficiently characterized it, as to enable us to judge what species they intended. It is found in the *Mediterranean* more frequently than in our seas, and we believe is the fish mentioned by Mr. *Armstrong*, and Doctor *Cleghorn**, in their Histories of *Minorca*, under the name of *Molio*, *Mollera*, and *Molle*. It is known on the coast of *Cornwall* by the name of the greater forked beard**, where it was first discovered by Mr. *Jago*.

* *Armstrong*, 161. *Cleghorn*, 43.

** *Barbus major* Cornubiensis *cirris bifurcatis*: the great forked beard. Mr. *Jago*. *Raii syn. pisc.* 163. *fig.* 7.

We

We place it in this genus, as it has more the appearance of the cod-fish kind, the hake especially, than of the *Blenny*, into which genus *Linnæus* has flung it; we therefore have given this species the name of the *Lesser Hake*.

The length of one that was taken on the *Flintshire* shores was eleven inches and an half, its greatest depth three inches; but according to Doctor *Borlase*, some grow to be above eighteen inches long.

The head sloped down to the nose in the same easy manner with others of this genus: the mouth large: besides the teeth in the jaws was a triangular congeries of small teeth in the roof of the mouth.

At the end of the lower jaw was a small beard. The first dorsal fin was triangular; the first ray extended far beyond the rest, and was very slender: the second fin began just behind the first, and extended almost to the tail: the ventral fins were three inches long, and consisted of only two rays, joined at the bottom, and separated or bifurcated towards the end: the vent was in the middle of the body: the anal fin extended from thence just to the tail: the lateral line was incurvated: the tail was rounded.

The color was a cinereous brown.

XII. The LESTHAKE.

Barbus minor *Cornubienſis* cirris bifurcis. The leſſer forked beard. Mr. *Jago*. *Raii ſyn. piſc.* 164. *fig.* 8.

WE never ſaw this ſpecies, and having but very imperfect deſcriptions of it, cannot with any certainty pronounce it to be of this genus, but are unwilling to ſeparate them, as we found them united by that judicious Icthyologiſt Mr. *Jago*.

It is ſaid not to exceed five inches in length: the firſt dorſal fin (in the print) is ſhorter than that of the preceding; the ſecond reſembles that of the other kind: the ventral fins bifurcated. It has a ſmall beard, and a rounded tail, but the head is ſhorter and more ſteep; the color black, the ſkin ſmooth, and the appearance diſagreeable.

XIII. The LING.

Ling, Lingfiſche. *Belon.* 130. *Geſner piſc.* 95.
Molva major *Charleton ex. piſc.* 3.
Aſellus longus, eine Lenge. *Schonevelde*, 18.
Ling. *Wil. Icth.* 175. *Raii ſyn. piſc.* 56.
Gadus dorſo dipterygio, ore ſerrato, maxilla ſuperiore longiore. *Arted. ſynon.* 36.
Gadus molva. *Lin. ſyſt.* 439.
Langa. *Faun. ſucc. No.* 313.

THE ling takes its name from its length, being corrupted from the word *long*. It abounds about the *Scilly Iſles*, on the coaſts of *Scarborough*, and

and thoſe of *Scotland* and *Ireland*, and forms a conſiderable article of commerce *.

In the *Yorkſhire* ſeas they are in perfection from the beginning of *February* to the beginning of *May*, and ſome till the end of that month. In *June* they ſpawn, depoſiting their eggs in the ſoft oozy ground of the mouth of the *Tees*: at that time the males ſeparate from the females, and reſort to ſome rocky ground near *Flamborough Head*, where the fiſhermen take great numbers without ever finding any of the female or roed fiſh among them.

While a ling is in ſeaſon its liver is very white, and abounds with a fine flavored oil; but as ſoon as the fiſh goes out of ſeaſon, the liver becomes red as that of a bullock, and affords no oil. The ſame happens to the cod and other fiſh in a certain degree, but not ſo remarkably as in the ling. When the fiſh is in perfection, a very large quantity of oil may be melted out of the liver by a ſlow fire, but if a violent ſudden heat be uſed for that purpoſe, they yield very little. This oil, which nature hoards up in the cellular membranes of fiſhes, returns into their blood, and ſupports them in the engendring ſeaſon, when they purſue the buſineſs of generation with ſo much eagerneſs as to neglect their food. Oil.

Vaſt quantities of ling is ſalted for exportation, as well as for home conſumption. When it is cut or ſplit for curing, it muſt meaſure twenty-ſix inches or upwards from the ſhoulder to the tail; if leſs than

* This branch of trade was conſiderable ſo long ago as the reign of *Edward* III. an act for regulating the price of *Lob*, *Ling*, and *Cod*, being made in his 31ſt year.

that

that it is not reckoned a ſizeable fiſh, and conſequently not entitled to the bounty on exportation; ſuch are called *Drizzles*, and are in ſeaſon all ſummer.

Deſcr. The uſual ſize of a ling is from three to four feet; but we have heard of one that was ſeven feet long.

The body is very ſlender; the head flat; the upper jaw the longeſt; the teeth in that jaw ſmall and very numerous; in the lower, few, ſlender, and ſharp: on the chin is a ſmall beard.

The firſt dorſal fin is ſmall, placed near the head, and conſiſts of fifteen rays: the ſecond is very long, reaching almoſt to the tail, and conſiſts of ſixty-five rays: the pectoral fins have fifteen radiated rays, the ventral fins ſix; the anal ſixty-two: the tail is rounded at the end.

Color. Theſe fiſh vary in color, ſome being of an olive hue on the ſides and back, others cinereous; the belly white.

XIV. The

XIV. The BURBOT.

Strinſias, ou Botatriſſa. *Belon.* 300.
Lota. *Rondel. fluviat.* 165. *Geſner piſc.* 599.
Quappen, Elff-quappen, Tider-quappen, Truſchen ? *Schonevelde*, 49.
Burbot, or Bird-bolt. *Plot. Staff.* 241. *tab.* 22. *fig.* 4.
Muſtela fluviatilis noſtratibus Eel-pout. *Wil. Icth.* 125. *Raii ſyn. piſc.* 67.
Aal-rutte, Rutte. *Kram.* 388.
Gadus dorſo dipterygio, ore cirrato, maxillis æqualibus. *Arted. ſynon.* 38.
Gadus Lota. *Lin. ſyſt.* 440. *Gronov. Zooph. No.* 97.
Lake. *Faun. ſuec. No.* 113.

THIS fiſh is found in the *Trent*, but in greater plenty in the river *Witham*, and in the great *Eaſt Fen* in *Lincolnſhire*. It is a very delicate fiſh for the table, tho' of a diſguſting appearance when alive. It is very voracious, and preys on the fry and leſſer fiſh. It does not often take a bait, but is generally caught in weels. Place.

It abounds in the lake of *Geneva*, where it is called *Lota*, and it is alſo met with in the *Lago Maggiore*, and *Lugano*.

The largeſt that we ever heard was taken in our waters weighed between two and three pounds, but abroad they are ſometimes found of double that weight. Deſcr.

Their body has ſome reſemblance to that of an eel, only ſhorter and thicker, and its motions alſo reſemble thoſe of that fiſh: they are beſides very ſmooth, ſlippery, and ſlimy.

The

The head is very ugly, being flat, and ſhaped like that of a toad: the teeth are very ſmall, but numerous: the irides yellow.

On the end of the noſe are two ſmall beards; on the chin another: the number of its branchioſtegous rays are ſeven.

The firſt dorſal fin is ſhort: the ſecond is placed immediately behind it, and extends almoſt to the tail: the pectoral fins are rounded: the ventral fins conſiſt of ſix rays, of which the two firſt are divided near their ends from each other: the vent is placed in the middle of the belly, and the anal fin reaches almoſt to the tail: the tail is rounded at the end.

Color. The color of this ſpecies varies; ſome are duſky, others of a dirty green, ſpotted with black, and oftentimes with yellow, and the belly in ſome is white; but the real colors are frequently concealed by the ſlime.

XV. The SPOTTED WHISTLE FISH.

Muſtella vulgaris. *Rondel.* 281. *Geſner piſc.* 89.
Sea Loche *Ceſtriæ*, Whiſtle Fiſh *Cornubiæ*. *Wil. Icth.* 121. *Raii ſyn. piſc.* 67. Rockling, Mr. *Jago*. *Raii ſyn. piſc.* 164. *fig.* 9.

THIS ſpecies commonly frequents the rocky ſhores of theſe iſlands, and is ſometimes taken with a bait.

It grows to the length of one foot: the head is large and flat: the eyes not remote from the end of

of the noſe: the body is long, ſlender, and compreſſed ſideways, eſpecially towards the tail: at the end of the upper jaw are two beards; on the chin one.

The teeth are numerous and ſmall, diſpoſed along the jaws in form of a broad plate: in the roof of the mouth is a ſet of ſmall teeth, diſpoſed in a triangular form.

The number of branchioſtegous rays is ſeven.

The firſt dorſal fin is lodged in a deep furrow juſt beyond the head, and conſiſt of a number of ſhort unconnected rays: the ſecond riſes juſt behind it, and reaches very near the tail: the pectoral fins are broad and round: the ventral fins ſmall; the ſecond ray the longeſt: the anal fin reaches almoſt to the tail: the tail rounded at the end.

The ſcales are very ſmall: the color of the body and head a reddiſh yellow, marked above the lateral line with large black ſpots: the back fin and tail are darker; the vent fin of a brighter red, but all are ſpotted. The lateral line bends in the middle, then paſſes ſtrait to the tail.

XVI. The BROWN WHISTLE FISH.

Gadus dorſo dipterygio, ſulco magno ad pinnam dorſi primam, ore cirrato? *Arted. Synon.* 37.

Gadus muſtela. G. dipterygius cirris 5, pinna dorſali priore exoleta. *Lin. ſyſt.* 440. *Gronov. Zooph. No.* 314.

MR. *Willoughby* makes this ſpecies with five beards, a variety only of the former; but having opportunity of examining ſeveral ſpecimens, we muſt diſſent from his opinion, having always obſerved

ſerved the number of beards in the ſpotted kind not to exceed three, nor the number in the brown kind to be leſs than five. The firſt ray of the firſt dorſal fin is very long. There is alſo ſome difference in the form as well as color, this ſpecies being rather thicker in proportion than the former.

Excepting theſe particulars, and the number of beards, there is a general agreement in the parts of both. The beards on the upper jaw are four, viz. Two at the very end of the noſe, and two a little above them: on the end of the lower jaw is a ſingle one.

Theſe fiſh are of a deep olive brown, their belly whitiſh. They grow to the ſame ſize as the former.

The *Corniſh* fiſhermen are ſaid to whiſtle, and make uſe of the words *Bod*, *Bod vean*, when they are deſirous of taking this fiſh, as if by that they facilitated the capture. In the ſame manner the *Sicilian* fiſhermen repeat their *Mamaſſu di pajanu*, &c. when they are in purſuit of the *Sword Fiſh**.

* *Vide p.* 127.

Genus XX. Head blunt at the end, and very ſteep.
Body ſmooth and ſlippery.
Teeth ſlender.
Body compreſſed ſideways.
Ventral fins conſiſting generally of only two united rays. One dorſal fin.
Six branchioſtegous rays. BLENNY †.

*

With a creſted head.

I. The CRESTED BLENNY.

Adonis, ou exocetus. *Belon.* 219.
Galerita. *Rondel.* 204. *Geſner piſc.* 14, 17, 18.
Alauda criſtata, ſive Galerita. *Wil. Icth.* 134. *Raii ſyn. piſc.* 73.
Blennius criſta capitis tranſverſa cutacea. *Arted. ſynon.* 44.
Blennius Galerita. *Lin. ſyſt.* 441.

THIS ſpecies is found, tho' not frequently, on our rocky ſhores, and is commonly about four or five inches long.

On the head is a ſmall creſt-like fin, which it can erect or depreſs at pleaſure. On the top of the head between the eyes is a triangular lump pointing backwards, and red about its edges.

† There being no *Engliſh* name for this genus, *Blenny* is given it, derived from the word *Blennius*, the generical term uſed by *Artedius*, who forms it from Βλέννα *mucus*, it being of a ſlimy nature.

The ſkin at the corner of the upper jaw is looſe, and projects.

From the hind part of the head almoſt to the tail extends the dorſal fin: the ventral fin is ſmall: the vent is placed under the ends of the pectoral fins.

The body is ſmooth and ſlippery: the color brown, and ſpotted.

II. The GATTORUGINE.

Scorpioides. *Rondel.* 204. *Geſner piſc.* 847.
Gattorugine *Venetiis. Wil. Icth.* 132. *Raii ſyn. piſc.* 72.
Blennius pinnulis duabus ad oculos, pinna ani officulorum viginti trium. *Arted. ſynon.* 44.
Blennius Gattorugine. *Lin. ſyſt.* 442.

Place. THIS curious kind was diſcovered to be a *Britiſh* fiſh, by the Rev. Mr. *Williams*, who found it on the *Angleſea* coaſt, and favored us with it.

Deſcr. Its length was ſeven inches and an half: the body was ſmooth, and compreſſed on the ſides: the belly a little prominent: the vent ſituated as in the preceding fiſh.

The teeth ſlender, almoſt ſetaceous, and very cloſe ſet: between the eyes was a ſmall hollow, and above each juſt on the ſummit was a narrow looſe membrane, trifurcated at the top, which diſtinguiſhes this from all other ſpecies.

The pectoral fins broad and rounded, conſiſting of fourteen rays, which extend beyond the webs, making the edges appear ſcalloped.

The

The ventral-fins like thoſe of others of the genus: the dorſal fin conſiſted of fourteen ſtrong ſpiny rays, and nineteen ſoft rays; the laſt of which were higher than the ſpiny rays.

The anal fin had twenty-one rays: the ends in every fin extended beyond their webs.

The tail was rounded at the end, and conſiſted of twelve rays, divided towards their extremities.

This fiſh in general was of a duſky hue, marked acroſs with wavy lines: the belly of a light-aſh color.

The lower part of the pectoral fins, and the ends of the ventral fins, of an orange color.

**

With a ſmooth head.

III. The SMOOTH BLENNY.

La tierce eſpece de Exocetus? *Belon.* 219.

Alauda non criſtata. *Rondel.* 205. *Geſner piſc.* 18.

Mulgranoc, & Bulcard *Cornubiæ. Wil. Icth.* 133. *Raii ſyn. piſc.* 73.

Cataphractus lævis *Cornubienſis*, Smooth Shan. *Mr. Jago apud Raii ſyn. piſc.* 164. *fig.* 10.

Blennius maxilla ſuperiore longiore, capite ſummo acuminato. *Arted. ſynon.* 45.

Blennius Pholis. *Lin. ſyſt.* 443. *Gronov. Zooph. No.* 259.

WE diſcovered this ſpecies in plenty lying under the ſtones among the tang on the rocky coaſts of *Angleſea*, at the lower water-mark. It was very active and vivacious, and would by the help Place.

of its ventral fins creep up between the ſtones with great facility. It bit extremely hard, and would hang at ones finger for a conſiderable time. It was very tenacious of life, and would live for near a day out of water.

It feeds on ſhells and ſmall crabs, whoſe remains we found in its ſtomach.

Deſcr. The length in general was five inches: the head large, and ſloping ſuddenly to the mouth: the irides red.

The teeth ſlender, very ſharp, and cloſe ſet: there were twenty-four in the upper, and nineteen in the lower jaw.

The pectoral fins broad and rounded, conſiſting of thirteen rays: the ventral fins of only two thick rays, ſeparated near their ends.

The dorſal fin conſiſted of thirty-two ſoft rays, and reached from the hind part of the head almoſt to the tail.

The vent was in the middle of the body: the anal fin extended almoſt to the tail, and conſiſted of nineteen rays, tipt with white.

The tail rounded at the end, and compoſed of twelve branched rays.

The color varied, ſome were quite black, but generally they were of a deep olive, prettily marbled with a deeper color; others ſpotted with white: the laſt often diſpoſed in rows above and beneath the lateral line.

IV. The SPOTTED BLENNY.

Gunnellus *Cornubienſium*, nonnullis *Butter-fiſh*, q. d. Liparis. *Wil. Icth.* 115. *Raii ſyn. piſc.* 144.

Blennius maculis circiter decem nigris limbo albicante utrinque ad pinnam dorſalem. *Arted. ſynon.* 45.

Blennius Gunnellis. B. pinna dorſali ocellis X nigris. *Lin. ſyſt.* 443. *Faun. ſuec. No.* 318. *Seb. Muſ.* iii. p. 91. *tab.* 30. *fig.* 6.

Pholis maculis annulatis ad pinnam dorſalem, pinnis ventralibus obſoletis. *Gronov. Zooph. No.* 267.

THIS ſpecies is found in the ſame place with the preceding, lurking like it under ſtones, is equally vivacious, and is uſed as a bait for larger fiſh.

Its length is ſix inches: the depth only half an inch: the ſides very much compreſſed, and extremely thin.

The head and mouth is ſmall; the laſt points upwards, and the lower jaw ſlopes conſiderably towards the throat.

The teeth are very ſmall; the irides whitiſh.

The pectoral fins rounded, and of a yellow color: inſtead of the ventral fins are two minute ſpines.

The dorſal fin conſiſt of ſeventy-eight ſhort ſpiny rays, and runs the length of the back almoſt to the tail: on the top of the back are eleven round ſpots, which reach the lower half of the dorſal fin; they are black, half encircled with white.

The vent is in the middle of the body; the anal fin extends from it almoſt to the tail.

The tail is rounded, and of a yellow color.

The back and ſides are of a deep olive: the belly whitiſh.

V. The VIVIPAROUS BLENNY.

Muſtela marina vivipara, Ael-quappe, Ael-pute, Ael-moder. *Schonevelde.* 50. *tab.* 4.

Guffer, Eelpout. *Sib. Scot.* iii. 25.

Muſtela vivipara *Schoneveldii. Wil. Icth.* 122. *Raii ſyn. piſc.* 69.

Blennius capite dorſoque fuſco flaveſcente lituris nigris, pinna ani flava. *Arted. ſynon.* 45.

Blennius viviparus, B. ore tentaculis duobus. *Lin. ſyſt.* 443.

Tanglake. *Faun. ſuec. No.* 317. *Muſ. Ad. Fr.* I. 69. *tab.* 32.

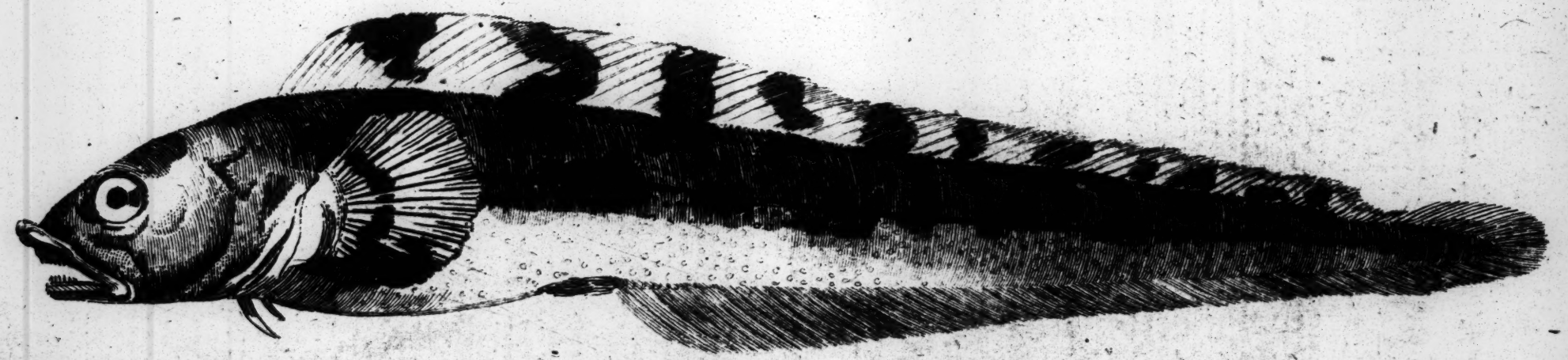
Enchelyopus corpore lituris variegato; pinna dorſi ad caudam ſinuata. *Gronov. Zooph. No.* 265.

SCHONEVELDE firſt diſcovered this ſpecies; Sir *Robert Sibbald* afterwards found it on the *Scotch* coaſts; and *Linnæus* has deſcribed it in his account of his *Swediſh* majeſty's *Muſeum*.

We are unacquainted with this fiſh; but on the authority of Sir *Robert Sibbald*, give it a place in this work, borrowing our deſcription from *Schonevelde* and *Linnæus*.

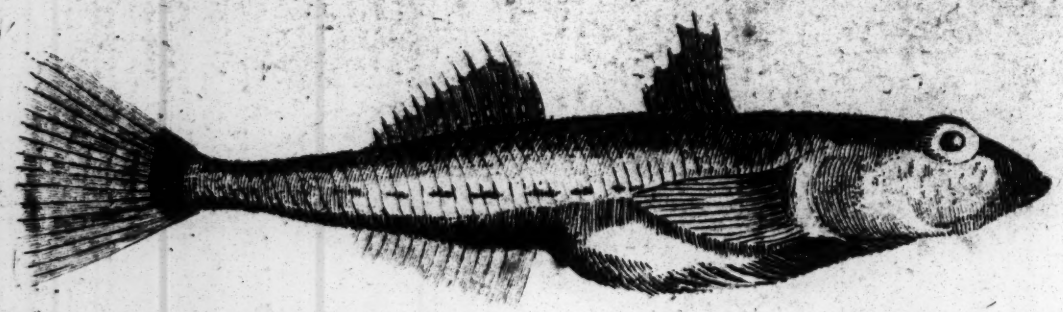
They are viviparous, bringing forth two or three hundred young at a time. Their ſeaſon of parturition is a little after the depth of winter. Before *Midſummer* they quit the bays and ſhores, and retire into the deep, where they are commonly taken. They are a very coarſe fiſh, and eat only by the poor.

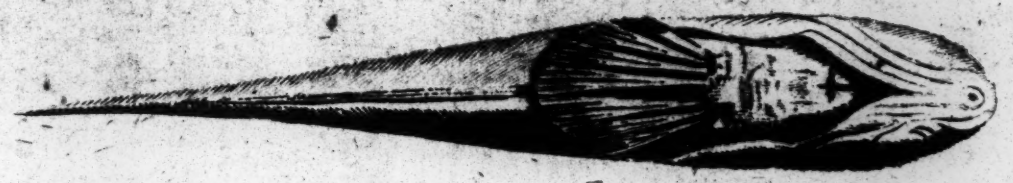
They





SPOTTED BLENNY.





SPOTTED GOBY.

B L

They are commonly about a foot in length, and of an eel-like form: their ſkin ſmooth and ſlippery. Deſcr.

At the noſtrils are two ſmall beards: the jaws are very rough: the covers of the gills open.

The dorſal fin commences at the hind part of the head, and reaches almoſt to the tail; it conſiſts of eighty rays.

The pectoral fins are rounded, and are compoſed of nineteen rays: the ventral fins of only four very ſhort ones.

The anal fins extends to and unites with the tail, which is ſmall, and ends in a ſharp point.

The color of the back and head is a yellowiſh brown, ſtained with black ſtrokes: the ſides a little lighter: the belly of a dirty white: the dorſal fin marked in the ſame manner as the back.

Sect. III. THORACIC FISH.

Genus XXI. Eyes placed near each other.
Four branchioſtegous rays.
Ventral fins united. GOBY*.

I. The BLACK GOBY.

Gobio niger. *Rondel.* 200. *Geſner piſc.* 395.
Schwartzer Goeb. *Schonevelde.* 36.
Sea Gudgeon. Rock-fiſh. *Wil. Icth.* 206. *Raii ſyn. piſc.* 76.
Gobius ex nigricante varius, pinna dorſi ſecunda oſſiculorum quatuor decim. *Arted. ſynon.* 46.
Gobius niger. *Lin. ſyſt.* 449.
Eleotris capite cathetoplateo, pinnis ventralibus concretis, *Gronov. Zooph. No.* 281.

IT is to this fiſh that Naturaliſts have given the ſynonym of Κωβιος, and *Gobio*, names of certain ſpecies mentioned by *Ariſtotle*, *Pliny*, and *Oppian*. The two firſt have not left any characters for us to diſtinguiſh them by; and *Oppian* at once ſhews that he never intended this kind, as he has placed it, among thoſe which are armed with a poiſonous ſpine. *Ariſtotle* was acquainted with two ſpecies; one a ſea fiſh that frequented the rocks, another that was gregarious, and an inhabitant of rivers, which laſt ſeems to have been our common gudgeon.

* Formed from *Gobius*, the generic name beſtowed by Naturaliſts on theſe fiſh.

This

This ſpecies grows to the length of ſix inches: the body is ſoft, ſlippery, and of a ſlender form: the head is rather large; the cheeks inflated; the teeth ſmall, and diſpoſed in two rows: from the head to the firſt dorſal fin is a ſmall ſulcus. Deſcr.

The firſt dorſal fin conſiſts of ſix rays; the ſecond of fourteen; the pectoral fins of ſixteen or ſeventeen, cloſely ſet together, and the middlemoſt the longeſt; the others on each ſide gradually ſhorter.

The ventral fins coaleſce and form a ſort of funnel, by which theſe fiſh affix themſelves immoveably to the rocks, for which reaſon they are called *Rock-fiſh*.

The tail is rounded at the end.

The color is brown, or deep olive, mixed with dark ſtreaks, and ſpotted with black: the dorſal and anal fins are of a pale blue, the rays marked with minute black ſpots.

II. The SPOTTED GOBY.

Αφυα? *Athen. lib.* vii. *p.* 284.
Aphia. *Belon.* 207.
Aphya cobites. *Rondel.* 210. *Geſner piſc.* 67. *Wil. piſc.* 207. *Raii ſyn. piſc.* 76.
Gobius Aphya et marſio dictus. *Arted. ſynon.* 47.
Gobius Aphya. G. faſciis etiam pinnarum fuſcis. *Lin. ſyſt.* 450.

WE ſaw ſeveral of this ſpecies taken laſt ſummer on our ſandy ſhores in the ſhrimp nets.

The length of the largeſt was not three inches: the noſe was blunt: the eyes large and prominent, ſtanding far out of the head: the irides ſappharine; the head flat; the tongue large; teeth in both jaws.

The firſt dorſal fin conſiſted of ſix rays, the ſecond of eleven, and placed at ſome diſtance from the other.

The ventral fins are united: the anal conſiſt of eleven rays: the tail is even at the end.

The body is of a whitiſh color, obſcurely ſpotted with ferruginous: the rays of the dorſal fins, and the tail, barred with the ſame color.

Genus

Genus XXII. Large flat head, armed with ſharp ſpines.
Six branchioſtegous rays.

BULL-HEAD.

I. The BULL-HEAD.

Βοὶτος. *Ariſt. Hiſt. an. lib.* iv. *c.* 8.
Chabot. *Belon.* 213.
Cottus. *Rondel. Fluviat.* 202.
Gobio capitatus. *Geſner piſc.* 401.
Een Miiller. *Schwenckfelt. Siles.* 431.
Bull-head, Miller's Thumb. *Wil. Icth.* 137. *Raii ſyn. piſc.* 76.
Cottus alepedotus glaber, capite diacantho. *Arted. ſynon.* 76.
Cottus Gobio. C. lævis, capite ſpinis duabus. *Lin. ſyſt.* 452.
Sten-ſimpa, Slagg-ſimpa. *Faun. ſuec. No.* 323.
Koppe. *Kram.* 384. *Gronov. Zooph. No.* 270.

THIS ſpecies is very common in all our clear brooks; it lies almoſt always at the bottom, either on the gravel or under a ſtone: it depoſits its ſpawn in a hole it forms in the gravel, and quits it with great reluctance. It feeds on water inſects; and we found in the ſtomach of one the remains of the freſh water ſhrimp, the *pulex aquatilis* of *Ray*.

This fiſh ſeldom exceeds the length of three inches and an half: the head large, broad, flat, and thin at its circumference, being well adapted for inſinuating itſelf under ſtones: on the middle part of the covers of the gills is a ſmall crooked ſpine turning inwards.

The

The eyes are very ſmall: the irides yellow: the teeth very minute, placed in the jaws and the roof of the mouth.

The body grows ſlender towards the tail, and is very ſmooth.

The firſt dorſal fin conſiſts of ſix rays, the ſecond of ſeventeen: the pectoral fins are round, and prettily ſcalloped at their edges, and are compoſed of thirteen rays; the ventral of only four; the anal of thirteen; the tail of twelve, and is rounded at the end.

The color of this fiſh is as diſagreeable as its form, being duſky, mixed with a dirty yellow: the belly whitiſh.

II. The POGGE.

Cataphractus, Stein-bicker, Miiller, Turſs-bull. *Schonevelde.* 30. *tab.* 3.

Cataphractus *Schoneveldii* Septentr. *Anglis* a Pogge. *Wil. Icth.* 211. *Raii ſyn. piſc.* 77.

Cottus cirris plurimis corpore octagono. *Arted. ſynon.* 77.

Cottus Cataphractus. C. loricatus, roſtro verrucoſo 2 bifidis, capite ſubtus cirroſo. *Lin. ſyſt.* 451.

Botn-mus. *Faun. ſuec. No.* 324. *Seb. Muſ.* iii. *tab.* 28. *Gronov. Zooph. No.* 271.

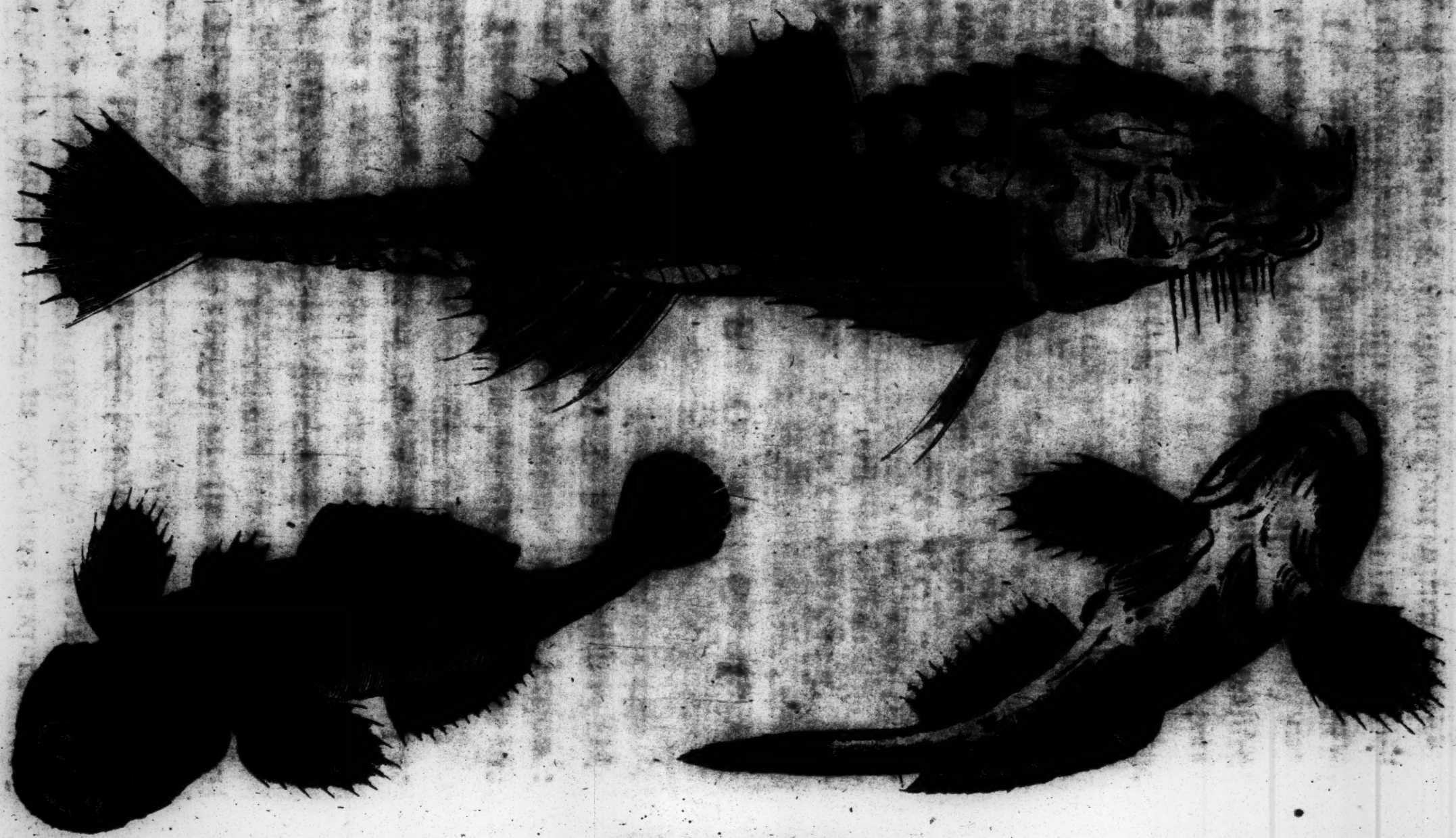
THE pogge is very common on moſt of the *Britiſh* coaſts.

It ſeldom exceeds five inches and an half in length, and even ſeldom arrives at that ſize.

The head is large, bony, and very rugged: the end of the noſe is armed with four ſhort upright ſpines. on the throat are a number of ſhort white beards.

The

XI. POGGE.



BULL-HEAD.

P. Mazell del et fe

BL

The teeth are very minute, ſituated in the jaws.

The body is octagonal, and covered with a number of ſtrong bony cruſts, divided into ſeveral compartments, the ends of which project into a ſharp point, and form ſeveral echinated lines along the back and ſides from the head to the tail.

The firſt dorſal fin conſiſts of ſix ſpiny rays: the ſecond is placed juſt behind the firſt, and conſiſts of ſeven ſoft rays.

The pectoral fins are broad and rounded, and are compoſed of fifteen rays.

III. The FATHER-LASHER.

Scorpios. *Ovid. Halieut.* 116.
La Scorpene. *Belon.* 242.
Scorpius marinus, Waelkuke, Buloffe, Schorp-fiſche. *Schonevelde.* 67. *tab.* 6.
Scorpænæ *Belonii* ſimilis *Cornub.* Father-laſher. *Wil. Icth.* 138. *Raii ſyn. piſc.* 145.
Scorpius virginianus. *Idem.* 142. *Wil. Icth. App.* 25.
Cottus ſcorpius. C. capite ſpinis pluribus, maxilla ſuperiore paulo longiore. *Lin. ſyſt.* 452.
Rot-ſimpa, Skrabba, Skialryta. *Faun. ſuec. No.* 323.
Ulke. *Crantz. Greenl.* I. 95. *Gronov. Zooph. No.* 268.
Sea Scorpion. *Edw.* 284.

THIS fiſh is not uncommon on the rocky coaſts of this iſland: it lurks under ſtones, and will take a bait.

It does not grow to a large ſize, ſeldom exceeding (as far as we have ſeen in the ſpecimens that are taken on our ſhores) eight or nine inches. Deſcr.

The head is very large, and has a moſt formidable appearance, being armed with vaſt ſpines, which it can

can oppoſe to any enemy that attacks it, by ſwelling out its cheeks and gill covers to a large ſize.

Et capitis duro nociturus Scorpios *ictu.*
The hurtful *Scorpion* wounding with its head.

Spines. The noſe and ſpace contiguous to the eyes are furniſhed with ſhort ſharp ſpines: the covers of the gills are terminated by exceeding long ones, which are both ſtrong and very ſharp pointed.

The mouth is large: the jaws covered with rows of very ſmall teeth: the roof of the mouth is furniſhed with a triangular ſpot of minute teeth.

The back is more elevated than that of others of this genus: the belly prominent: the ſide-line rough, the reſt of the body very ſmooth, and grows ſlender towards the tail.

The firſt dorſal fin conſiſts of eight ſpiny rays; the ſecond of eleven high ſoft rays: the pectoral fins are large, and have ſixteen; the ventral three; the anal eight: the tail is rounded at the end, and is compoſed of twelve bifurcated rays.

The color of the body is brown, or duſky and white marbled, and ſometimes is found alſo ſtained with red: the fins and tail are tranſparent, ſometimes clouded, but the rays barred regularly with brown: the belly is of a ſilvery white.

American. This kind is very frequent in the *Newfoundland* ſeas, where it is called *Scolping*: it is alſo as common on the coaſt of *Greenland* in deep water near ſhore. It is a principal food of the natives, and the ſoup made of it is ſaid to be agreeable as well as wholeſome.

Genus

Genus XXIII. Body very deep, and compreſſed ſideways.
Very long filaments iſſuing from the firſt dorſal fin.
Seven branchioſtegous rays.

DOREE.

I. The DOREE.

Χαλκὲυς. *Athen. lib.* vii. 328. *Oppian Halieut.* I. 133.
Faber ? *Ovid Halieut.* 110. Zeus idem Faber *Gadibus. Plin. lib.* ix. *c.* 18.
La Dorèe. *Belon.* 146.
Faber ſive Gallus marinus. *Rondel.* 328. *Geſner piſc.* 369.
A Doree. *Wil. Icth.* 294. *Raii ſyn piſc.* 99.
Zeus ventre aculeato, cauda in extremo circinato. *Arted. ſynon.* 78.
Zeus Faber. Z. cauda rotundata, lateribus mediis ocello fuſco, pinnis analibus duabus. *Lin. ſyſt.* 454. *Gronov. Zooph. No.* 311.
Zeus ſpinoſus. *Muſ. Fred. Ad.* 67. *tab.* xxxi.

SUPERSTITION hath made the *Doree* rival to the *Hadock*, for the honor of having been the fiſh out of whoſe mouth St. *Peter* took the tribute-mony, leaving on its ſides thoſe inconteſtible proofs of the identity of the fiſh, the marks of his finger and thumb.

It is rather difficult at this time to determine on which part to decide the diſpute; for the *Doree* likewiſe aſſerts an origin of its ſpots of a ſimilar nature, but of a much earlier date than the former. St.

Chriſtopher,

*Chriſtopher**, in wading thro' an arm of the ſea, having caught a fiſh of this kind *en paſſant*, as an eternal memorial of the fact, left the impreſſions on its ſides to be tranſmitted to all poſterity. Could this but be eſtabliſhed, we ſhould not heſitate to pronounce in favor of the hadock.

In our own country it was very long before this fiſh attracted our notice, at leſt as an edible one. We are indebted to that judicious actor and *bon vivant* the late Mr. *Quin*, for adding a moſt delicious fiſh to our table, who overcoming all the vulgar prejudices on account of its deformity, has effectually eſtabliſhed its reputation.

Place. This fiſh was ſuppoſed to be found only in the ſouthern ſeas of this kingdom, but it has been diſcovered laſt year on the coaſt of *Angleſea*. Thoſe of the greateſt ſizé are taken in the *Bay* of *Biſcay* off the *French* coaſts: they are alſo very common in the *Mediterranean*; *Ovid* muſt therefore have ſtyled it *rarus Faber*, on account of its excellency not its ſcarcity.

Deſcr. The form of this fiſh is hideous: its body is oval, and greatly compreſſed on the ſides: the head large: the ſnout vaſtly projecting: the mouth very wide: the teeth very ſmall.

The eyes great: the irides yellow.

* *Belon. Rondel.* alſo *Aldrovand de piſc.* 40. St. *Chriſtopher* was of a *Coloſſal* ſtature, as is evident from his image in the church of *Notre Dame* at *Paris*, and a ſtill larger at *Auxerre*: the laſt we think is near ſeventy feet high. His hiſtory is expreſſed in his name, χριϛοφοροϛ, being ſaid to have carried our Saviour, when a child, over an arm of the ſea.

The

The lateral line oddly diſtorted, ſinking at each end, and riſing near the back in the middle: beneath it on each ſide is a round black ſpot.

The firſt dorſal fin conſiſts of ten ſtrong ſpiny rays, with long filaments, reaching far beyond their ends: the ſecond is placed near the tail, and conſiſts of twenty-four ſoft rays, the middlemoſt of which are the longeſt.

The pectoral fins have fourteen rays, the ventral ſeven; the firſt ſpiny, the others ſoft: it has two anal fins; the firſt conſiſts of four ſharp ſpines, the ſecond of twenty-two ſoft ones, and reaches very near the tail.

The tail is round at the end, and conſiſts of fifteen branched rays.

The color of the ſides are olive, varied with light blue and white, and while living is very reſplendent, and as if gilt, for which reaſon it is called the *Doree*.

Size. The largeſt fiſh we have heard of weighed twelve pounds.

Genus XXIV. Body quite flat, and very thin. Eyes, both on the ſame ſide the head. Branchioſtegous rays from four to ſeven. FLOUNDER.

*

With the eyes on the right ſide.

I. The HOLIBUT.

Hippogloſſus. *Rondel.* 325. *Geſner piſc.* 669.
Heglbutte, Hilligbutte. *Schonevelde.* 62.
Holibut, *Septentr. Anglis* Turbot. *Wil. Icth.* 99. *Raii ſyn. piſc.* 33.
Pleuronectes oculis a dextris, totus glaber. *Arted. ſynon.* 31.
Pleuronectes Hippogloſſus. *Lin. ſyſt.* 456.
Halg-ſlundra. *Faun. ſuec. No.* 329. *Gronov. Zooph. No.* 247.

Size. THIS is the largeſt of the genus; ſome have been taken in our ſeas weighing from one to three hundred pounds; but much larger are found in thoſe of *Newfoundland*, *Greenland*, and *Iceland*, where they are taken with a hook and line in very deep water. They are part of the food of the *Greenlanders* *, who cut them into large ſlips, and dry them in the ſun.

They are common in the *London* markets, where they are expoſed to ſale cut into large pieces. They

* *Crantz. Hiſt. Greenl.* I. 98.

are

are very coarſe eating, excepting the part which adheres to the ſide fins, which is extremely fat and delicious, but ſurfeiting.

They are the moſt voracious of all flat fiſh. The laſt year there were two inſtances of their ſwallowing the lead weight at the end of a line, with which the ſeamen were ſounding the bottom from on board a ſhip, one off *Flamborough Head*, the other going into *Tinmouth Haven:* the latter was taken, the other diſengaged itſelf.

The holibut, in reſpect to its length, is the narroweſt of any of this genus except the ſole. Deſcr.

It is perfectly ſmooth, and free from ſpines either above or below. The color of the upper part is duſky; beneath of a pure white. We do not count the rays of the fins in this genus, not only becauſe they are ſo numerous, but becauſe nature hath given to each ſpecies characters ſufficient to diſtinguiſh them by.

Theſe flat fiſh ſwim ſideways; for which reaſon *Linnæus* hath ſtyled them *Pleuronectes*.

II. The WHIFF.

Paſſer *Cornubienſis* aſper, magno oris hiatu. Mr. *Jago. Raii ſyn. piſc.* 163. *fig.* 2.

BY the figure Mr. *Jago* has left of this ſpecies, it bears a great reſemblance to the holibut. He calls it the *Whiff*, and ſays its mouth is large, its ſkin hard and rough, its color a dirty aſh, and its fleſh coarſe and good for nothing. The ſkin appears to be much ſpotted, and the lateral line greatly incurvated at the beginning, and afterwards proceeding in a ſtrait direction to the tail.

III. The PLAISE.

Plateſſa? *Auſonii Epiſt. ad. Theon.* 62.
Le Quarlet. *Belon.* 139.
Quadratulus. *Rondel.* 318. *Geſner piſc.* 665.
Scholle, Pladiſe. *Schonevelde.* 61.
Plaiſe. *Wil. Icth.* 96. *Raii ſyn. piſc.* 31.
Pleuronectes oculis et tuberculis ſex a dextra capitis, lateribus glabris, ſpina ad anum. *Arted. ſynon.* 30.
Pleuronectes Plateſſa. *Lin. ſyſt.* 456. *Gronov. Zooph. No.* 246.
Skalla, Rodſputta. *Faun. ſuec. No.* 328.

THESE fiſh are very common on moſt of our coaſts, and ſometimes taken of the weight of fifteen pounds; but they ſeldom reach that ſize, one of eight or nine pounds being reckoned a large fiſh.

The

The beſt and largeſt are taken off *Rye*, on the coaſt of *Suſſex*, and alſo off the *Dutch* coaſts. They ſpawn in the beginning of *February*.

They are very flat, and much more ſquare than the preceding. Behind the left eye is a row of ſix tubercles, that reaches to the commencement of the lateral line.

The upper part of the body and fins is of a clear brown, marked with large bright orange-colored ſpots: the belly is white.

IV. The FLOUNDER.

Le Flez. *Belon.* 141.
Paſſeris tertia ſpecies. *Rondel.* 319. *Geſner piſc.* 666, 670.
Struff-butte. *Schonevelde.* 62.
Flounder, Fluke, or But. *Wil. Icth.* 980. *Raii ſyn. piſc.* 32.
Pleuronectes oculis a dextris, linea laterali aſpera, ſpinulis ſupinè ad radices pinnarum, dentibus obtuſis. *Arted. ſynon.* 31.
Pleuronectes Fleſus. *Lin. ſyſt.* 457. *Gronov. Zooph. No.* 248.
Flundra, Slatt-ſkadda. *Faun. ſuec. No.* 327.

THE flounder inhabits every part of the *Britiſh* ſea, and even frequents our rivers at a great diſtance from the ſalt waters; and for this reaſon ſome writers call it the *Paſſer fluviatilis*. It never grows large in our rivers, but is reckoned ſweeter than thoſe that live in the ſea. It is inferior in ſize to the plaiſe, for we never heard of any that weighed more than ſix pounds.

It may very eaſily be diſtinguiſhed from the plaiſe, or any other fiſh of this genus, by a row of ſharp ſmall ſpines that ſurround its upper ſides, and are Deſcr.

placed juſt at the junction of the fins with the body. Another row marks the ſide-line, and runs half way down the back.

The color of the upper part of the body is a pale brown, ſometimes marked with a few obſcure ſpots of dirty yellow: the belly is white.

We have met with a variety of this fiſh with the eyes and lateral line on the left ſide. *Linnæus* makes a diſtinct ſpecies of it under the name of *Pleuronectes Paſſer*, p. 459; but ſince it differs in no other reſpect from the common kind, we agree with Doctor *Gronovius* in not ſeparating them.

V. The D A B.

La Limande. *Belon.* 142.
Paſſer aſper, ſive ſquamoſus. *Rondel.* 319. *Geſner piſc.* 665.
Dab. *Wil. Icth.* 97. *Raii ſyn. piſc.* 32.
Pleuronectes oculis a dextra, ſquamis aſperis, ſpina ad anum, dentibus obtuſis. *Arted. ſynon.* 33.
Pleuronectes Limanda. Pl. oculis dextris, ſquamis ciliatis, ſpinulis ad radicem pinnarum dorſi, anique. *Lin. ſyſt.* 457.

THE dab is found with the other ſpecies, but is leſs common. It is in beſt ſeaſon during *February*, *March*, and *April*: they ſpawn in *May* and *June*, and become flabby and watery the reſt of the ſummer. They are ſuperior in goodneſs to the plaiſe and flounder, but far inferior in ſize.

Deſcr. It is generally of an uniform brown color on the upper ſide, tho' ſometimes clouded with a darker. The ſcales are ſmall and rough, which is a character

ter of this ſpecies. The lateral line is extremely incurvated at the beginning, then goes quite ſtrait to the tail. The lower part of the body is white.

VI. The SMEAR-DAB.

Rhombus lævis maculis nigris, a Kit. Mr. *Cornubienſis* *Jago. Raii ſyn. piſc.* 162. *fig.* 1.

WE found one of this ſpecies at a fiſhmonger's in *London* laſt winter, where it is known by the name of the ſmear-dab.

It was a foot and an half long, and eleven inches broad between fin and fin on the wideſt part.

The head appeared very ſmall, as the dorſal fin began very near its mouth, and extended very near to the tail. It conſiſted of ſeventy nine rays.

The eyes were pretty near each other. The mouth full of ſmall teeth.

The lateral line was much incurvated for the firſt two inches from its origin, then continued ſtrait to the tail.

The back was covered with ſmall ſmooth ſcales, was of a light brown color, ſpotted obſcurely with yellow. The belly white, and marked with five large duſky ſpots.

It was a fiſh of goodneſs equal to the common dab.

VII. The SOLE.

Βαγλωσσος. *Athen. lib.* viii. *p.* 288. *Oppian Halieut.* I. 99.
La Sole. *Belon.* 142.
Bugloſſus. *Rondel.* 320. *Geſner piſc.* 666.
Tungen. *Schonevelde.* 63.
Pleuronectes oculis a ſiniſtra corpore oblongo, maxilla ſuperiore longiore, ſquamis utrinque aſperis. *Arted. ſyn.* 32.
Pleuronectes Solea. *Lin. ſyſt.* 457. *Gronov. Zooph. No.* 251.
Tunga, Sola. *Faun. ſuec. No.* 326.

THE ſole is found on all our coaſts, but thoſe on the weſtern ſhores are much ſuperior in ſize to thoſe of the north. On the former they are ſometimes taken of the weight of ſix or ſeven pounds, but towards *Scarborough* they rarely exceed one pound; if they reach two, it is extremely uncommon.

They are uſually taken in the trawl-net: they keep much at the bottom, and feed on ſmall ſhell fiſh.

Deſcr. It is of a form much more narrow and oblong than any other of the genus. The irides are yellow; the pupils of a bright ſappharine color: the ſcales are ſmall, and very rough: the upper part of the body is of a deep brown: the tip of one of the pectoral fins black: the under part of the body is white: the lateral line ſtrait: the tail rounded at the end.

It is a fiſh of a very delicate flavor; but the ſmall ſoles are much ſuperior in goodneſs to large ones.

ones*. The chief fiſhery for them is at *Blixham*, and in *Torbay*.

VIII. The SMOOTH SOLE.

Solea? *Ovid. Halieut.* 124. *Wil. Icth.* 102. *Raii ſyn. piſc.* 34.
Arnogloſſus ſeu Solea lævis.

THIS, as deſcribed by Mr. *Ray*, (for we have not ſeen it) is extremely thin, pellucid, and white, and covered with ſuch minute ſcales, and thoſe inſtantly deciduous, as to merit the epithet ſmooth.

It is a ſcarce ſpecies, but is found in *Cornwall*, where, from its tranſparency, it is called the *Lantern Fiſh*.

It is probable that *Ovid* intended this ſpecies, by his *Solea*; for the common kind does by no means merit his deſcription.

Fulgentes SOLEÆ *candore.*

And *Soles* with white reſplendent.

* By the antient laws of the *Cinque* ports, no one was to take ſoles from the 1ſt of *November* to the 15th of *March*; neither was any body to fiſh from ſun-ſetting to ſun-riſing, that the fiſh might enjoy their night-food.

IX. The

**

With the eyes on the left side.

IX. The TURBOT.

Rhombus. *Ovid. Halieut.*
Le Turbot. *Belon.* 134.
Rhombus, aculeatus. *Rondel.* 310. *Gesner pisc.* 661.
Steinbutt, Torbutt, Treenbutt, Dornbutt. *Schonevelde.* 60.
Turbot. in the *north* a Bret. *Wil. Icth.* 94.
Rhombus maximus asper non squamosus. *Raii syn. pisc.* 31.
Pleuronectes oculis a sinistra, corpore aspero. *Arted. synon.* 32.
Pleuronectes maximus. *Lin. syst.* 459. *Gronov. Zooph. No.* 254.
Butta. *Faun. suec. No.* 325.

Size. TURBOTS grow to a very large size; we have seen them of three and twenty pounds weight, but have heard of some that weighed thirty. They are taken chiefly off the north coast of *England*, and others off the *Dutch* coast; but we believe the last has, in many instances, more credit than it deserves for the abundance of its fish.

Fishery. The large turbots, and several other kinds of flat fish, are taken by the hook and line, for they lye in deep water: the method of taking them in wares, or staked nets, is too precarious to be depended on for the supply of our great markets, because it is by meer accident that the great fish stray into them.

It is a misfortune to the inhabitants of many of our fishing coasts, especially those of the north part of *North Wales*, that they are unacquainted with the most

moſt ſucceſsful means of capture: for their benefit, and perhaps that of other parts of our iſland, we ſhall lay before them the method practiſed by the fiſhermen of *Scarborough*, as it was communicated to us by Mr. *Travis*.

When they go out to fiſh, each perſon is provided with three lines. Each man's lines are fairly coiled upon a flat oblong piece of wicker-work; the hooks being baited, and placed very regularly in the centre of the coil. Each line is furniſhed with 14 ſcore of hooks, at the diſtance of ſix feet two inches from each other. The hooks are faſtened to the lines upon ſneads of twiſted horſe-hair, 27 inches in length. Lines.

When fiſhing there are always three men in each coble, and conſequently nine of theſe lines are faſtened together, and uſed as one line, extending in length near three miles, and furniſhed with 2520 hooks. An anchor and a buoy are fixed at the firſt end of the line, and one more of each at the end of each man's lines; in all four anchors, which are commonly perforated ſtones, and four buoys made of leather or cork. The line is always laid acroſs the current. The tides of flood and ebb continue an equal time upon our coaſt, and when undiſturbed by winds run each way about ſix hours. They are ſo rapid that the fiſhermen can only ſhoot and haul their lines at the turn of tide; and therefore the lines always remain upon the ground about ſix hours*. The ſame rapidity of tide prevents their uſing hand-

* In this ſpace the *myxine glutinoſa* of *Linnæus*, will frequently penetrate the fiſh that are on the hooks, and entirely devour them, leaving only the ſkin and bones.

lines;

lines; and therefore two of the people commonly wrap themſelves in the ſail, and ſleep while the other keeps a ſtrict look-out, for fear of being run down by ſhips, and to obſerve the weather. For ſtorms often riſe ſo ſuddenly, that it is with extreme difficulty they can ſometimes eſcape to the ſhore, leaving their lines behind.

Coble. The coble is 20 feet 6 inches long, and 5 feet extreme breadth. It is about one ton burthen, rowed with three pair of oars, and admirably conſtructed for the purpoſe of encountering a mountanous ſea: they hoiſt ſail when the wind ſuits.

The five-men boat is 40 feet long and 15 broad, and of 25 tons burthen: it is ſo called, tho' navigated by ſix men and a boy, becauſe one of the men is commonly hired to cook, &c. and does not ſhare in the profits with the other five. All our able fiſhermen go in theſe boats to the herring fiſhery at *Yarmouth* the latter end of *September*, and return about the middle of *November*. The boats are then laid up until the beginning of *Lent*, at which time they go off in them to the edge of the *Dogger*, and other places, to fiſh for turbot, cod, ling, ſkates, &c. They always take two cobles on board, and when they come upon their ground, anchor the boat, throw out the cobles, and fiſh in the ſame manner as thoſe do who go from the ſhore in a coble, with this difference only; that here each man is provided with double the quantity of lines, and inſtead of waiting the return of tide in the coble, return to the boat and bait their other lines; thus hawling one ſet, and ſhooting another every turn of tide. They

commonly

commonly run into harbour twice a week to deliver their fiſh. The five-men boat is decked at each end, but open in the middle, and has two large lug-ſails.

The beſt bait for all kinds of fiſh is freſh herring cut in pieces of a proper ſize; and notwithſtanding what has been ſaid to the contrary, they are taken here at any time in the winter, and all the ſpring, whenever the fiſhermen put down their nets for that purpoſe. The five-men boats always take ſome nets for that end. Next to herrings are the leſſer lampreys*, which come all winter by land-carriage from *Tadcaſter*. The next baits in eſteem are ſmall hadocks cut in pieces, ſand worms, muſcles, and limpets (called here *Flidders*;) and laſtly, when none of theſe can be had they uſe bullock's liver. The hooks uſed here are much ſmaller than thoſe employed at *Iceland* and *Newfoundland*. Experience has ſhewn that the larger fiſh will take a living ſmall one upon the hook, ſooner than any bait that can be put on; therefore they uſe ſuch as the ſmall fiſh can ſwallow. The hooks are two inches and an half long in the ſhank, and near an inch wide between the ſhank and the point. The line is made of ſmall cording, and is always tanned before it is uſed. Bait.

Turbots, and all the rays, are extremely delicate in their choice of baits. If a piece of herring or hadock has been twelve hours out of the ſea, and then uſed as bait, they will not touch it.

* The *Dutch* alſo uſe theſe fiſh as baits in the turbot fiſhery, and purchaſe annually from the *Thames* fiſhermen as much as amounts to 700*l.* worth, for that purpoſe.

This

Deſcr. This and the pearl are of a remarkable ſquare form: the color of the upper part of the body is cinereous, marked with numbers of black ſpots of different ſizes: the belly is white: the ſkin is without ſcales, but greatly wrinkled, and mixed with ſmall ſhort ſpines, diſperſed without any order.

X. The PEARL.

La Barbue. *Belon.* 137.
Rhombus lævis. *Rondel.* 312. *Geſner piſc.* 662.
Schlichtbutt. *Schonevelde.* 60.
Rhombus non aculeatus ſquamoſus *the Pearl. Londinens. Cornub. Lug-aleaf. Wil. Icth.* 95. *Raii ſyn. piſc.* 31.
Pleuronectes oculis a ſiniſtris, corpore glabro. *Arted. ſyn.* 31.
Pleuronectes Rhombus. *Lin. ſyſt.* 458. *Gronov. Zooph. No.* 249.
Pigghvarf. *It wgoth.* 178.

IT is frequently found in the *London* markets, but is inferior to the turbot in goodneſs as well as ſize.

The irides are yellow: the ſkin is covered with ſmall ſcales, but is quite free from any ſpines or inequalities.

The upper ſide of the body is of a deep brown, marked with ſpots of dirty yellow: the under ſide is of a pure white.

Genus

Genus XXV. Covers of the gills ſcaly.
Five branchioſtegous rays.
Fore teeth ſharp.
Grinders flat.
One dorſal fin, reaching the whole length of the back.
Forked tail. GILT-HEAD.

I. The GILT-HEAD.

χρυσοφρυς. *Oppian Halieut.* I. 169.
Chryſophrys. *Ovid. Halieut.* iii.
Aurata *Plinii. lib.* IX. *c.* 16.
La Dorade. *Belon.* 186. Chryſophry *Caii opus.* 112.
Aurata. *Rondel.* 115. *Geſner piſc.* 110. 112.
Gilt-head or Gilt-poll. *Wil. Icth.* 307. *Raii ſyn. piſc.* 131.
Sparus dorſo acutiſſimo, linea arcuata inter oculos. *Arted. ſynon.* 63.
Sparus lunula aurea inter oculos. *Lin. ſyſt.* 467. *Gronov. Zooph. No.* 220.

THIS is one of the *piſces ſaxatiles*, or fiſh that haunt deep waters on bold rocky ſhores: thoſe that form this genus, as well as the following, feed chiefly on ſhell fiſh, which they comminute with their teeth before they ſwallow; the teeth of this genus in particular being extremely well adapted for that purpoſe, the grinders being flat and ſtrong, like thoſe of certain quadrupeds: beſides thoſe are certain bones in the lower part of the mouth, which aſſiſt in grinding their food.

They

'They are but a coarſe fiſh; nor did the *Romans* hold them in any eſteem, except they had fed on the *Lucrine* oyſter.

Non omnis laudem pretiumque AURATA *meretur,*
Sed cui ſolus erit concha LUCRINA *cibus* *.

No praiſe, no price a *Gilt-head* e'er will take,
Unfed with oyſters of the *Lucrine* lake.

Deſcr. They grow to the weight of ten pounds: the form of the body is deep, not unlike that of a bream: the back is very ſharp and of a duſky green color: the irides of a ſilvery hue: between the eyes is a ſemilunar gold color'd ſpot, the horns of which point towards the head: on the upper part of the gills is a black ſpot, beneath that another of purple.

The dorſal fin extends almoſt the whole length of the back, and conſiſts of twenty-four rays, the eleven firſt ſpiny, the others ſoft: the pectoral fins conſiſt of ſeventeen ſoft rays; the ventral of ſix rays, the firſt of which is very ſtrong and ſpiny: the anal fin of fourteen; the three firſt ſpiny.

The tail is much forked.

Color. It takes its name from its predominant color; that of the forehead and ſides being as if gilt, but the laſt is tinged with brown.

* *Martial. lib.* xiii. *ep.* 90.

II. The SEA BREAM.

Pagur? *Ovid. Halieut.* 107.
Le Pagrus. *Belon.* 245.
Pagrus. *Rondel.* 142. *Geſner. piſc.* 656.
Sea Bream. *Wil. Icth.* 312. *Raii ſyn. piſc.* 131.
Sparus rubeſcens, cute ad radicem pinnarm dorſi et ani in ſinum producta. *Arted. ſynon.* 64.
Sparus Pagrus. *Lyn. ſyſt.* 469.

THIS ſpecies grows to a ſize equal with that of the former: its ſhape and the figure of the teeth are much the ſame. Deſcr.

The irides are ſilvery: the inſide of the covers of the gills, the mouth, and the tongue, are of a fine red.

At the baſe of the pectoral fins is a ferruginous ſpot.

What is peculiar to this ſpecies is, that the ſkin at the end of the dorſal and anal fins is gathered up, and hides the laſt rays.

The ſcales are large: the tail forked.

The color of the whole body is red. Color.

III. The LESSER SEA BREAM.

Brama marina cauda forcipata D. *Jonſton*, *Raii ſyn. piſc.* 115.
will: ich. app. p. 17. t. V 12.

THIS ſpecies was communicated to Mr. *Ray* by his friend Mr. *Jonſton*, a *Yorkſhire* gentleman, who informed him it was found on the ſands near the mouth of the *Tees*, *Sept.* 18, 1681.

It was a deep fiſh, formed like a roch, twenty-ſix inches long, ten broad, and grew very ſlender towards the tail.

The eyes large, like thoſe of quadrupeds. In the lower jaw were two rows of teeth, in the upper a ſingle row of ſmall ones. The aperture of the gills very large, and like thoſe of a ſalmon: the body ſcaly.

In the middle of the back was one fin extending almoſt to the tail; behind the vent another.

The back black; the ſides of a brighter color; the belly quite of a ſilvery brightneſs.

Genus XXVI. Deep body.
Very minute ſcales.
Setaceous teeth on the tongue only.
One long dorſal fin. OPAH.

I. The O P A H.

Opah, or King-Fiſh. *Phil. Tranſ. Abridg. vol.* xi. 879. *tab.* v.
Phil Trans. vol. 46. p. 518. tab. 4.

WE have only four inſtances of this fiſh being taken in our ſeas, each of them in the *North*, viz. twice off *Scotland* *, once off *Northumberland*, and once in *Filey-Bay*, *Yorkſhire*. This laſt was caught about two years ago, and exhibited as a ſhew at *Scarborough*.

It is of that genus which *Linnæus* diſtinguiſhes by the name of *Chætodon*, from its briſtly teeth, and is ſaid to be very common on the coaſt of *Guinea*.

It is well deſcribed by an anonymous writer in the *London Magazine* for *October*, 1767, which we ſhall borrow, as the account is confirmed to us by Mr. *Travis*, who had an opportunity of examining one of the ſame ſpecies.

Newcaſtle, *Sept.* 12. On *Saturday* laſt was thrown upon the ſands at *Blyth*, a very rare and beautiful fiſh, weighing between ſeventy and eighty pounds**,

* The fiſh engraved by Sir *Robert Sibbald*, *Hiſt. Scot. tab.* 6. and thus deſcribed, is of this kind. *Piſcis maculis aureis aſperſus non ſcriptus, pollices* 42 *longus.*

** That deſcribed in the *Philoſophical Tranſactions* weighed eighty-two pounds.

ſhaped like the ſea bream. The length was three feet and an half; the breadth from back to belly almoſt two feet; but the thickneſs from ſide to ſide not above ſix inches.

The mouth ſmall for the ſize of the fiſh, forming a ſquare opening, and without any teeth in the jaws. The tongue thick, reſembling that of a man, but rough and thick ſet with beards or prickles, pointing backwards, ſo that any thing might eaſily paſs down, but could not eaſily return back, therefore theſe might ſerve inſtead of teeth to retain its prey *. The eyes remarkably large, covered with a membrane, and ſhining with a glare of gold. The cover of the gills like the ſalmon.

The body diminiſhes very ſmall to the tail, which is forked, and expands twelve inches: the gill fins are broad, about eight inches long, and play horizontally: a little behind their inſertion the back fin takes its original, where it is about ſeven inches high, but ſlopes away very ſuddenly, running down very near the tail, and at its termination becomes a little broader: the belly fins are very ſtrong, and placed near the middle of the body: a narrow fin alſo runs from the anus to the tail.

All the fins, and alſo the tail, are of a fine ſcarlet; but the colours and beauty of the reſt of the body, which is ſmooth and covered with almoſt imperceptible ſcales, beggars all deſcription; the upper part being a kind of bright green, variegated with whi-

* The writer omitted the deſcription of the tongue and its ſetaceous teeth, which we ſupply from the *Tranſactions*.

tiſh

tiſh ſpots, and enriched with a ſhining golden hue, much reſembling the ſplendor of the peacock's feathers; this by degrees vaniſhes in a bright ſilver; and near the belly the gold begins again to predominate in a lighter ground than on the back.

Genus XXVII. Covers of the gills ſcaly.
Branchioſtegous rays unequal in number *.
Teeth conic, long and blunt at their ends. One tuberculated bone in the bottom of the throat: two above oppoſite to the other.
One dorſal fin reaching the whole length of the back: a ſlender ſkin extending beyond the end of each ray.
Rounded tail. WRASSE.

1. The WRASSE. +

Vieille, Poule de mer, Gallot, une Roſſe. *Belon.* 248.
Turdorum undecimum genus. *Rondel.* 179. *Geſner piſc.* 1019.
Turdus vulgatiſſimus. *Wil. Ieth.* 319.
Wraſſe, or Old Wife. *Raii ſyn. piſc.* 136.
Labrus roſtro ſurſum reflexo cauda in extremo circulari. *Arted. ſynon.* 56.
Labrus Tinca. *Lin. ſyſt.* 477.

THIS ſpecies is found in deep water adjacent to the rocks. It will take a bait, tho' its uſual food is ſhell-fiſh, and ſmall cruſtacea.

* *Linnæus* ſays ſix: this ſpecies had only four; the ſecond, ſix; the third and fourth, five. We alſo find the ſame variation in the rays of the fins, the numbers being different in fiſh of the ſame ſpecies, not only of this but of other *genera*.

+ called at Plymouth the Connor

It grows to the weight of four or five pounds: it bears ſome reſemblance to a carp in the form of the body, and is covered with large ſcales.

The noſe projects; the lips are large and fleſhy, and the one turns up, the other hangs down: the mouth is capable of being drawn in or protruded.

Teeth. The irides are red: the teeth are diſpoſed in two rows; the firſt are conic, the ſecond very minute, and as if ſupporters to the others: in the throat juſt before the gullet are three bones, two above of an oblong form, and one below of a triangular ſhape; the ſurface of each riſing into roundiſh protuberances: theſe are of ſingular uſe to the fiſh, to grind its ſhelly food before it arrives at the ſtomach.

The dorſal fin conſiſts of ſixteen ſharp and ſpiny rays, and nine ſoft ones, which are much longer than the others.

The pectoral fins large and round, and are compoſed of fifteen rays.

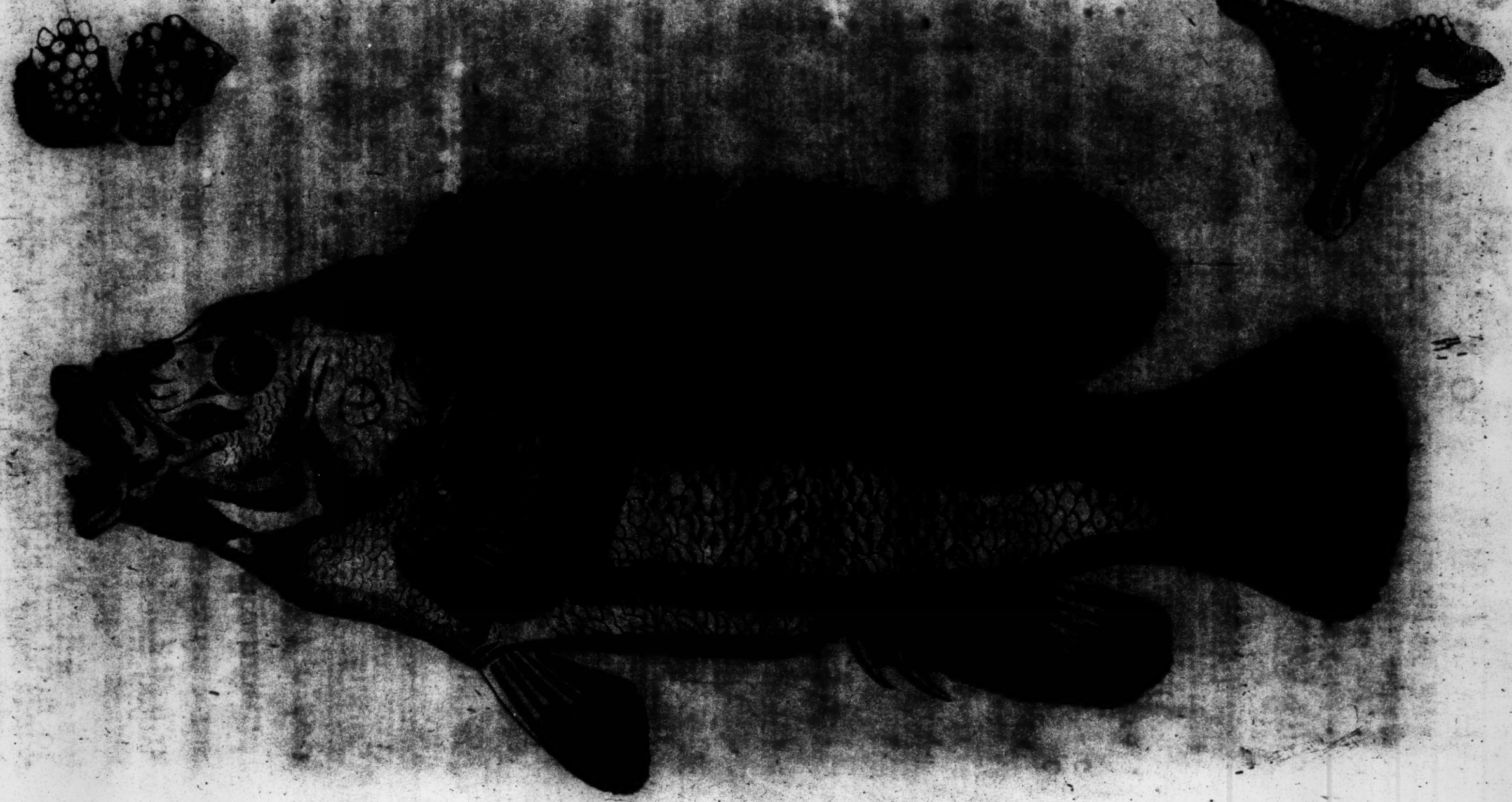
The ventral of ſix; the firſt ſharp and ſtrong: the anal of three ſharp ſpines, and nine flexible.

The tail is rounded at the end, and is formed of fourteen ſoft branching rays.

The lateral line much incurvated near the tail.

Color. Theſe fiſh vary infinitely in color: we have ſeen them of a dirty red, mixed with a certain duſkineſs;

others





B L

others moſt beautifully ſtriped, eſpecially about the head, with the richeſt colors, ſuch as blue, red, and yellow. Moſt of this genus are ſubject to vary; therefore care muſt be taken not to multiply the ſpecies from theſe accidental teints, but to attend to the form which never alters.

The *Welch* call this fiſh *Gwrach*, or the old woman; the *French*, *la Vieille*; and the *Engliſh* give it the name of *Old Wife*. Why they all agree in theſe ſynonyms it is difficult to aſſign a reaſon, except one too ill-bred and malignant to pollute our page. Name.

II. The BIMACULATED WRASSE.

Labrus bimaculata. L. pinna dorſali ramentacea, macula fuſca in latere medio, et ad caudam. *Lin. ſyſt.* 477.
Sciæna bimaculata. *Mus. Ad. Fred.* I. 66. *tab.* xxxi. *fig.* 66.

MR. *Brunnich* obſerved this ſpecies at *Penzance*, and referred me to *Linnæus*'s deſcription of it in the *Muſeum Ad. Fred.* where it is deſcribed under the name of *Sciæna Bimaculata*.

The body is pretty deep, and of a light color, marked in the middle on each ſide with a round brown ſpot; on the upper part of the baſe of the tail is another: the lateral line is incurvated. Deſcr

The branchioſtegous rays are ſix in number *: the firſt fifteen rays of the dorſal fin are ſpiny; the other eleven ſoft, and lengthened by a ſkinny appendage: the pectoral fins conſiſt of fifteen rays; the ventral

* *Linnæus*, in his laſt edition, has removed this ſpecies from the genus of *Sciæna*, to that of *Labrus*, tho' it does not agree with the laſt in *his* number of branchioſtegous rays.

of ſix; the firſt ſpiny; the ſecond and third ending in a ſlender briſtle: the anal fin is pointed; the four firſt rays being ſhort and ſpiny; the reſt long and ſoft.

III. The TRIMACULATED WRASSE.

THE ſpecies we examined was taken on the coaſt of *Angleſea*; its length was eight inches.

It was of an oblong form; the noſe long; the teeth ſlender; the fore teeth much longer than the others.

The eyes large: branchioſtegous rays, five.

The back fin conſiſted of ſeventeen ſpiny rays, and thirteen ſoft ones; beyond each extended a long nerve.

The pectoral fins were round, and conſiſted of fifteen branched rays.

The ventral fins conſiſted of ſix rays; the firſt ſpiny.

The anal fin of twelve; the three firſt ſhort, very ſtrong, and ſpiny; the others ſoft and branched.

The tail was rounded.

The lateral line was ſtrait at the beginning of the back, but grew incurvated towards the tail.

The body covered with large red ſcales; the covers of the gills with ſmall ones.

On each ſide of the lower part of the back fin were two large ſpots, and between the fin and the tail another.

IV. The

IV. The STRIPED WRASSE.

THIS was taken off the *Skerry Iſles*, on the coaſt of *Angleſea*; its length was ten inches.

The form was oblong, but the beginning of the back a little arched: the lips large, double, and much turned up: the teeth like thoſe of the preceding: branchioſtegous rays, five. Deſcr.

The number of rays in the back, pectoral, and ventral fins, the ſame as in thoſe of the former.

In the anal fin were fifteen rays; the three firſt ſtrong and ſpiny.

The tail almoſt even at the end, being very little rounded: the covers of the gills cinereous, ſtriped with fine yellow.

The ſides marked with four parallel lines of greeniſh olive, and the ſame of moſt elegant blue. Color.

The back and belly red; but the laſt of a much paler hue, and under the throat almoſt yellow.

Along the beginning of the back fin was a broad bed of rich blue; the middle part white; the reſt red.

At the baſe of the pectoral fins was a dark olive ſpot.

The ends of the anal fin, and ventral fins, a fine blue.

The upper half of the tail blue; the lower part of its rays yellow.

V. The

V. The GIBBOUS WRASSE.

THIS ſpecies was taken off *Angleſea*: its length was eight inches; the greateſt depth three: it was of a very deep and elevated form, the back being vaſtly arched, and very ſharp or ridged.

From the beginning of the head to the noſe, was a ſteep declivity.

The teeth like thoſe of the others.

The eyes of a middling ſize; above each a duſky ſemilunar ſpot.

The neareſt cover of the gills finely ſerrated.

The ſixteen firſt rays of the back ſtrong and ſpiny; the other nine ſoft and branched.

The pectoral fins conſiſted of thirteen, the ventral of ſix rays; the firſt ray of the ventral fin was ſtrong and ſharp.

The anal fin conſiſted of fourteen rays, of which the three firſt were ſtrongly aculeated.

The tail was large, rounded at the end, and the rays branched; the ends of the rays extending beyond the webs.

The lateral line was incurvated towards the tail.

The gill covers and body covered with large ſcales.

Color. The firſt were moſt elegantly ſpotted, and ſtriped with blue and orange, and the ſides ſpotted in the ſame manner; but neareſt the back the orange was diſpoſed in ſtripes: the back fin and anal fin were of a ſea green, ſpotted with black.

The

The ventral fins and tail a fine pea green.

The pectoral fins yellow, marked at their baſe with tranſverſe ſtripes of red.

VI. The GOLDSINNY.

Goldſinny *Cornubienſium.* Mr. *Jago. Raii ſyn. piſc.* 163. *fig.* 3.

THIS and the two following ſpecies were diſcovered by Mr. *Jago* on the coaſt of *Cornwall*: we never had an opportunity of examining them, therefore are obliged to have recourſe to his deſcriptions, retaining their local names.

In the whole form of the body, lips, teeth, and fins, it reſembles the *Wraſſe*: it is ſaid never to exceed a palm in length: near the tail is a remarkable black ſpot: the firſt rays of the dorſal fin are tinged with black.

The *Melanurus* of *Rondeletius* (adds he) takes its name from the black ſpot near the tail; but in many inſtances it differs widely from this ſpecies, the tail of the firſt is forked, that of the *Goldſinny* is even at the end.

VII. The

VII. The COMBER.

Comber *Cornub. Raii ſyn. piſc.* 163. *fig.* 5.

THE comber is a ſmall ſcaly fiſh, with the ſkin of a vermilion color. By the figure it is of an oblong form, and the tail rounded.

VIII. The COOK.

Cook (*i. e.* coquus) *Cornubienſium. Raii ſyn. piſc.* 163. *fig.* 4.

THIS ſpecies, Mr. *Jago* ſays, is ſometimes taken in great plenty on the *Corniſh* coaſts. It is a ſcaly fiſh, and does not grow to any great ſize. The back is purple and dark blue; the belly yellow. By the figure it ſeems of the ſame ſhape as the comber, and the tail rounded.

Beſides theſe ſpecies we recollect ſeeing taken at the *Giants Cauſeway* in *Ireland*, a moſt beautiful kind of a vivid green, ſpotted with ſcarlet; and others at *Bandooran*, in the county of *Sligo*, of a pale green. We were at that time inattentive to this branch of natural hiſtory, and can only ſay they were of a ſpecies we have never ſince ſeen.

Genus XXVIII. The edges of the gill-covers ſerrated.
Seven branchioſtegous rays.
Body covered with rough ſcales.
Firſt dorſal fin ſpiny; the ſecond ſoft*. PERCH.

I. The PERCH.

Πέρκη *Ariſt. Hiſt. an. lib.* vi. *c.* 14.
Perca *Auſonii Moſella.* 115.
Une Perche de riviere. *Belon.* 291.
Perca fluviatilis. *Rondel. fluviat.* 196. *Geſner. piſc.* 698.
Ein Barſs, *Schonevelde.* 55.
A Perch. *Wil. Icth.* 291. *Raii ſyn. piſc.* 97.
Perca lineis utrinque ſex tranſverſis nigris, pinnis ventralibus rubris. *Arted. ſynon.* 66.
Perca fluviatilis. P. pinnis dorſalibus diſtinctis, ſecunda radiis ſedecim. *Lin. ſyſt.* 481. *Gronov. Zooph. No.* 301.
Abborre. *Faun. ſuec. No.* 332.
Perſchling, Barſchieger. *Kram.* 384. *Wulff Boruſs. No.* 27.

THE perch of *Ariſtotle* and *Auſonius* is the ſame with that of the moderns. That mentioned by *Oppian*, *Pliny*, and *Athenæus***, is a ſea-fiſh probably of the *Labrus* or *Sparus* kind, being enumerated by them among ſome congenerous ſpecies. Our perch was much eſteemed by the *Romans*:

Nec te delicias menſarum Perca, *ſilebo*
Annigenos inter piſces dignande marinis. AUSONIUS.

* The *Ruffe* is an exception, having only one dorſal fin, but the fourteen firſt rays of it are ſpiny.

** *Oppian Halieut.* I. 124. *Plinii lib.* ix. *c.* 16. *Athenæus lib.* vii. *p.* 319.

It

It is not leſs admired at preſent as a firm and delicate fiſh; and the *Dutch* are particularly fond of it when made into a diſh called *Water Souchy*.

It is a gregarious fiſh, and loves deep holes and gentle ſtreams. It is a moſt voracious fiſh, and eager biter: if the angler meets with a ſhoal of them, he is ſure of taking every one.

It is a common notion that the pike will not attack this fiſh, being fearful of the ſpiny fins which the perch erects on the approach of the former. This may be true in reſpect to large fiſh; but it is well known the ſmall ones are the moſt tempting bait that can be laid for the pike.

The perch is a fiſh very tenacious of life: we have known them carried near ſixty miles in dry ſtraw, and yet ſurvive the journey.

Size. Theſe fiſh ſeldom grow to a large ſize: we once heard of one that was taken in the *Serpentine* river, *Hyde-Park*, that weighed nine pounds, but that is very uncommon.

Deſcr. The body is deep; the ſcales very rough: the back much arched.

The irides golden: the teeth ſmall, diſpoſed in the jaws and on the roof of the mouth: the edges of the covers of the gills ſerrated: on the lower end of the largeſt is a ſharp ſpine.

The firſt dorſal fin conſiſts of fourteen ſtrong ſpiny rays; the ſecond of ſixteen ſoft ones: the pectoral fins are tranſparent, and conſiſt of fourteen rays; the ventral of ſix; the anal of eleven.

The tail is a little forked.

The

The colors are beautiful: the back and part of the ſides being of a deep green, marked with five broad black bars pointing downwards: the belly is white, tinged with red: the ventral fins of a rich ſcarlet; the anal fins and tail of the ſame color, but rather paler. Color.

In a lake called *Llyn Raithlyn*, in *Merionethſhire*, is a very ſingular variety of perch: the back is quite hunched, and the lower part of the back bone, next the tail, ſtrangely diſtorted: in color, and in other reſpects, it reſembles the common kind, which are as numerous in the lake as theſe deformed fiſh. They are not peculiar to this water, for *Linnæus* takes notice of a ſimilar variety found at *Fahlun*, in his own country. Crooked Perch.

II. The BASSE.

Λάβραξ? *Ariſt. Hiſt. an. lib.* iv. *c.* 10. &c.
Lupus? *Ovid. Halieut.* 112.
Le Bar, le Soup. *Belon.* 113.
Lupus. *Rondel.* 268. *Geſner piſc.* 506.
A Baſſe. *Wil. Icth.* 271. *Raii ſyn. piſc.* 83.
Perca radiis pinnæ dorſalis ſecundæ tredecim, ani quatuordecim. *Arted. ſynon.* 69.
Perca Labrax. *Lin. ſyſt.* 482. *Gronov. Zooph. No.* 300.

THE baſſe is a ſtrong, active, and voracious fiſh: *Ovid* calls them *rapidi lupi*, a name continued to them by after-writers.

That which we had an opportunity of examining was ſmall; but they are ſaid to grow to the weight of fifteen pounds. Size.

The

The irides are ſilvery: the mouth large: the teeth are ſituated in the jaws, and are very ſmall: in the roof of the mouth is a triangular rough ſpace, and juſt at the gullet are two others of a roundiſh form.

The ſcales are of a middling ſize, are very thick ſet, and adhere cloſely.

The firſt dorſal fin has nine ſtrong ſpiny rays, of which the firſt is the ſhorteſt, the middlemoſt the higheſt; the ſecond dorſal fin conſiſts of thirteen rays, the firſt ſpiny, the others ſoft.

The pectoral fins have fifteen ſoft rays; the ventral ſix rays, the firſt ſpiny: the anal fourten rays, the three firſt ſpiny, the others ſoft: the tail is a little forked.

The body is formed ſomewhat like that of a ſalmon.

The color of the back is duſky, tinged with blue.

The belly white. In young fiſh the ſpace above the ſide line is marked with ſmall black ſpots.

It is eſteemed a very delicate fiſh.

III. The

III. The R U F F E.

Cernua. *Belon.* 186.
Percæ fluviatilis genus minus. *Geſner piſc.* 701.
Aſpredo *Caii opuſc.* 107.
Ein ſtuer, ſtuerbarſs. *Schonevelde.* 56.
Cernua fluviatilis. *Wil. Icth.* 334.
Ruffe. *Raii ſyn. piſc.* 143.
Perca dorſo monopterygio, capite cavernoſo. *Arted. ſyn.* 68.
Perca cernua. P. pinnis dorſalibus unitis radiis 27. ſpinis 15. cauda bifida. *Lin. ſyſt.* 487. *Gronov. Zooph. No.*
Giers, Snorgers. *Faun. ſuec. No.* 119.
Schroll, Pfaffenlaus. *Schaeff. piſc.* 37. *tab.* ii. *Wulff Boruſs. No.* 35.

THIS fiſh is found in ſeveral of the *Engliſh* ſtreams: it is gregarious, aſſembling in large ſhoals, and keeping in the deepeſt part of the water.

It is of a much more ſlender form than the perch, and ſeldom exceeds ſix inches in length.

The teeth are very ſmall, and diſpoſed in rows.

It has only one dorſal fin extending along the greateſt part of the back: the firſt rays like thoſe of the perch are ſtrong, ſharp, and ſpiny; the others ſoft.

The pectoral fins conſiſt of fifteen rays; the ventral of ſix; the anal of eight; the two firſt ſtrong and ſpiny: the tail a little bifurcated.

The body is covered with rough compact ſcales.

The back and ſides are of a dirty green, the laſt inclining to yellow, but both ſpotted with black.

The dorſal fin is ſpotted with black: the tail marked with tranſverſe bars.

IV. The BLACK RUFFE.

The Black Fiſh. Mr. *Jago*. *Borlaſe Cornwall*. 271, *tab*. xxv. *fig*. 8.

MR. *Jago* has left ſo brief a deſcription of this fiſh, that we find difficulty in giving it a proper claſs: it agrees with the *Ruffe* in the form of the body, and the ſmallneſs of the teeth, in having a ſingle extenſive fin on the back, a forked tail, and being of that ſection of bony fiſh, termed *Thoracic*: theſe appear by the figure, the teeth excepted. The other characters muſt be borrowed from the deſcription.

" It is ſmooth, with very ſmall thin ſcales, fifteen " inches long, three quarters of an inch broad; " head and noſe like a peal or trout; little mouth; " very ſmall teeth, beginning from the noſe four " inches and three quarters, near ſix inches long; " a forked tail; a large double noſtril. Two taken " at *Loo*, *May* 26, 1721, in the *Sean*, near the " ſhore, in ſandy ground with ſmall ore weed."

Genus

Genus XXIX. Three branchioſtegous rays.
The belly covered with bony plates.
One dorſal fin, with ſeveral ſharp ſpines between it and the head.
STICKLEBACK.

I. The THREE SPINED S. BACK.

La Grande Eſpinoche, un Epinard, une Artiere. *Belon.* 328.
Piſciculi aculeati prius genus. *Rondel. fluviat.* 206. *Geſner piſc.* 8.
Stickleblack, Banſtickle, or Sharpling. *Wil. Icth.* 341. *Raii ſyn. piſc.* 145.
Gaſteroſteus aculeis in dorſo tribus. *Arted. ſynon.* 80.
Gaſteroſteus aculeatus. *Lin. ſyſt.* 489. *Gronov. Zooph. No.* 406.
Spigg, Horn-fiſk. *Faun. ſuec. No.* 336.
Stichling, Stachel-fiſch. *Wulff. Boruſſ. No.* 37.

THESE are common in many of our rivers, but no where in greater quantities than in the *Fens* of *Lincolnſhire*, and ſome of the rivers that creep out of them. At *Spalding* there are, once in ſeven or eight years, amazing ſhoals that appear in the *Welland*, and come up the river in form of a vaſt column. They are ſuppoſed to be the multitudes that have been waſhed out of the fens by the floods of ſeveral years, and collected in ſome deep hole, 'till overcharged with numbers, they are periodically obliged to attempt a change of place. The quantity is ſo great, that they are uſed to manure the land, and trials have been made to get oil from

them. A notion may be had of this vaſt ſhoal, by ſaying that a man employed by the farmer to take them, has got for a conſiderable time four ſhillings a day by ſelling them at a halfpenny per buſhel.

Deſcr. This ſpecies ſeldom reaches the length of two inches: the eyes are large: the belly prominent: the body near the tail ſquare: the ſides are covered with large bony plates, placed tranſverſely.

On the back are three ſharp ſpines, that can be raiſed or depreſſed at pleaſure: the dorſal fin is placed near the tail: the pectoral fins are broad: the ventral fins conſiſt each of one ſpine, or rather plate, of unequal lengths, one being large, the other ſmall; between both is a flat bony plate, reaching almoſt to the vent: beneath the vent is a ſhort ſpine, and then ſucceeds the anal fin.

The tail conſiſts of twelve rays, and is even at the end.

The color of the back and ſides is an olive green; the belly white; but in ſome the lower jaws and belly are of a bright crimſon.

II. The

II. The TEN SPINED S. BACK.

La petite Eſpinoche. *Belon.* 328.
Piſciculi aculeati alterum genus. *Rondel. fluviat.* 206. *Geſner piſc.* 8.
Leſſer Stickleback. *Wil. Icth.* 342. *Raii ſyn. piſc.* 145.
Gaſteroſteus aculeis in dorſo decem. *Arted. ſynon.* 80.
Gaſteroſteus pungitius. *Lin. ſyſt.* 491. *Gronov. Zooph. No.* 405.
Benunge, Gaddſur, Gorquad. *Faun. ſuec. No.* 337.

THIS ſpecies is much ſmaller than the former, and of a more ſlender make.

The back is armed with ten ſhort ſharp ſpines, which do not incline the ſame way, but croſs each other.

The ſides are ſmooth, not plated like thoſe of the preceding: in other particulars it reſembles the former.

The color of the back is olive: the belly ſilvery.

III. The FIFTEEN SPINED S. BACK.

Aculeatus, ſive Pungitius marinus longus, Stein-bicker, Ersſkruper. *Schonevelde.* 10. *tab.* iv. *Sib. Scot.* iii. 24. *tab.* 19.

Aculeatus marinus major. *Wil. Ieth.* 340. *App.* 23. *Raii ſyn. piſc.* 145.

Gaſteroſteus aculeis in dorſo quindecim. *Arted. ſynon.* 81.

Gaſteroſteus ſpinachia. *Lin. ſyſt.* 492. *Gronov. Zooph. No.* 407. *Faun. ſuec. No.* 338.

THIS ſpecies inhabits the ſea, and is never found in freſh water.

Its length is above ſix inches: the noſe is long and ſlender: the mouth tubular: teeth ſmall.

The fore part of the body is covered on each ſide with a row of bony plates, forming a ridge; the body afterwards grows very ſlender, and is quadrangular.

Between the head and the dorſal fin are fifteen ſmall ſpines: the dorſal fin is placed oppoſite the anal fin: the ventral fins are wanting.

The tail is even at the end.

The color of the upper part is a deep brown: the belly white.

Genus XXX. Seven branchioſtegous rays.
Several ſmall fins between the dorſal fin and the tail. MACKREL.

I. The MACKREL.

Σκόμβρος. *Ariſt. Hiſt. an. lib.* vi. *c.* 17. ix. *c.* 2, *Athenæus. lib.* iii. 121. vii. 321. *Oppian Halieut.* I. 142.
Scomber. *Ovid. Halieut.* 94. *Plinii lib.* ix. *c.* 15, xxxi. *c.* 8.
Macarello, Scombro. *Salvian.* 241 *.
Le Macreau. *Belon.* 197.
Scomber. *Rondel.* 233. *Geſner piſc.* 841. (pro 861.)
Makerel. *Schonevelde.* 66.
Mackrell, or Macarel. *Wil. Icth.* 181. *Raii ſyn. piſc.* 58.
Scomber pinnulis quinque in extremo dorſo, polypterygio, aculeo brevi ad anum. *Arted. ſynon.* 48.
Scomber Scomber. *Lin. Syſt.* 492. *Gronov. Zooph. No.* 304.
Mackrill. *Faun. ſuec. No.* 339.

THE mackrel is a ſummer fiſh of paſſage that viſits our ſhores in vaſt ſhoals. It is leſs uſeful than other ſpecies of gregarious fiſh, being very tender, and unfit for carriage; not but that it may be preſerved by pickling and ſalting, a method, we believe, practiſed only in *Cornwall* **, where it proves a great relief to the poor during winter.

It was a fiſh greatly eſteemed by the *Romans*, becauſe it furniſhed the pretious *Garum*, a ſort of pickle that gave a high reliſh to their ſauces, and was beſides uſed medicinally. It was drawn from different Garum.

* This is the firſt opportunity we have had of looking into *Salvianus*, whoſe *Italian* ſynonyms we make uſe of.

** *Borlaſe Cornwall.* 269.

kinds of fish, but that made from the mackrel had the preference: the best was made at *Carthagena*, vast quantities of mackrel being taken near an adjacent isle, called from that circumstance, *Scombraria**, and the *Garum*, prepared by a certain company in that city, bore a high price, and was distinguished by the title of *Garum Sociorum* **.

This fish is easily taken by a bait, but the best time is during a fresh gale of wind, which is thence called a *mackrel* gale.

Size. It is not often that it exceeds two pounds in weight, yet we heard that there was one sold last summer in *London* that weighed five and a quarter.

Descr. The nose is taper and sharp pointed: the eyes large: the jaws of an equal length: the teeth small, but numerous.

The form of this fish is very elegant.

The body is a little compressed on the sides: towards the tail it grows very slender, and a little angular.

The first dorsal fin is placed a little behind the pectoral fin, is triangular, and consists of nine or ten stiff rays; the second lies at a distance from the other, and has twelve soft rays; the pectoral twenty; the ventral six: at the base of the anal fin is a strong spine.

Between the last dorsal fin and the tail, are five small fins, and the same number between the anal fin and the tail.

* *Strabo lib.* iii. 109.

** *Plinii lib.* xxxi. c. 8.

The

The tail is broad and ſemilunar: The color of the back and ſides above the lateral line, is a fine green, varied with blue, marked with black lines, pointing downwards; beneath the line the ſides and belly are of a ſilvery color. Color.

It is a moſt beautiful fiſh when alive; for nothing can equal the brilliancy of its color, which death impairs, but does not wholly obliterate.

II. The TUNNY.

Θυννος. *Ariſt. Hiſt. an. lib.* ii. *c.* 13. &c. *Athenæus. lib.* vii. 301. *Oppian Halieut.* iii. 620.
Thunnus. *Ovid. Halieut.* 95. 95. *Plinii. lib.* ix. *c.* 15.
Tonno. *Salvian.* 123.
Le Thon. *Belon.* 99.
Thunnus. *Rondel.* 241. *Geſner piſc.* 957.
Thunnus vel orcynus. *Schonevelde.* 75.
Tunny fiſh, or Spaniſh Mackrell. *Wil. Icth.* 176. *Raii ſyn. piſc.* 57.
Scomber pinnulis octo vel novem in extremo dorſo, ex ſulco ad pinnas ventrales. *Arted. ſynon.* 49.
Scomber Thunnus. Sc. pinnulis utrinque octo. *Lin. ſyſt.* 493. *Gronov. Zooph.* No. 305.

THE tunny was a fiſh well known to the antients, it made a conſiderable branch of commerce; the time of its arrival into the *Mediterranean* from the ocean was obſerved, and ſtations for taking them eſtabliſhed in places it moſt frequented; the eminencies above the fiſhery were ſtyled Θυννοσκοπεῖα*, and the watchmen that gave notice to thoſe below of the motions of the fiſh, Θυννοσκόποι**. From one of the for-

* *Strabo. lib.* v. 156.

** *Oppian Halieut.* iii. 638. This perſon anſwers to what the *Corniſh* call a *Huer*, who watches the arrival of the pilchards.

mer

mer the lover in *Theocritus* threatened to take a deſperate leap, on account of his miſtreſs's cruelty.

οὐκ επακουεις ?
Τὰν Βαίταν ἀποδὺς εἰς κυματα τηνα ἀλευμαι
Ωπερ τὼς ΘΥΝΝΩΣ σκοπιὰζεται Ὄλπις ο γριπεύς.

Do you not hear? then, rue your Goat-herd's fate,
For, from the rock where *Olpis* doth deſcry
The numerous *Thunny*, I will plunge and die.

The very ſame ſtation, in all probability, is at this time made uſe of, as there are very conſiderable thunny fiſheries on the coaſt of *Sicily*, as well as ſeveral other parts of the *Mediterranean* *, where they are cured, and make a great article of proviſion in the adjacent kingdoms. They are caught in nets, and amazing quantities are taken, for they come in vaſt ſhoals, keeping along the ſhores.

Size. They grow to a large ſize, ſometimes being found of above a hundred weight.

They are not common in our ſeas, but are ſometimes taken off the weſt of *England*.

Deſcr. Its form is leſs elegant than that of the mackrel, being rather thicker in the middle: the jaws are of an equal length; the mouth black within: beſides the teeth of the jaws, are others in the roof of the mouth.

The firſt dorſal fin is placed not remote from the head, and conſiſts of fourteen rays, and is lodged in a ſmall channel; the ſecond is almoſt contiguous to the other, and has the ſame number of rays.

* Many of them are the ſame that were uſed by the antients, as we learn from *Oppian* and others.

The

The pectoral fin conſiſts of thirty-four rays; the ventral fins are ſmall, and have ſix rays; the anal, thirteen: between the laſt dorſal fin and the tail, are from eight to ten ſmall ones, and between the anal fin and the tail eight.

The body near the tail is ſlender, and almoſt quadrangular; the tail is in the form of a creſcent.

The color of the upper part of the body is duſky, varied with blue and green; the ſides and the belly ſilvery. Color.

III. The S C A D.

Sauro. *Salvian.* 79.
Un Sou; Macreau baſtard. *Belon.* 186.
Trachurus. *Rondel.* 233.
Lacertus *Bellonii. Geſner piſc.* 467.
Muſeken, Stocker. *Schonevelde.* 75.
Scad, Horſe-mackrell. *Wil. Icth.* 290. *Raii ſyn. piſc.* 92.
Scomber linea laterali aculeata, pinna ani oſſiculorum 30. *Arted. ſynon.* 50.
Scomber Trachurus. Sc. pinnis unitis, ſpina dorſali recumbente, linea laterali loricata. *Lin. ſyſt.* 494. *Gronov. Zooph. No.* 308.

THAT which we examined was ſixteen inches long: the noſe ſharp; the eyes very large; the irides ſilvery: the lower jaw a little longer than the upper: the edges of the jaws were rough, but without teeth.

On the upper part of the covers of the gills was a large black ſpot.

The ſcales were large and very thin: the lower half of the body quadrangular, and marked each ſide

side with a row of thick strong scales, prominent in the middle, extending to the tail.

The first dorsal fin consisted of eight strong spines: the second lay just behind it, and consisted of thirty-four soft rays, and reached almost to the tail: the pectoral fins narrow and long, and composed of twenty rays: the ventral of six branched rays.

The vent was in the middle of the belly; the anal fin extended from it to the tail, which was greatly forked.

The head and upper part of the body varied with green and blue: the belly silvery.

This fish was taken in the month of *October*, was very firm and well tasted, having the flavor of mackrel.

Genus

Genus XXXI. Head compreſſed, ſteep, and covered with ſcales.
Two branchioſtegous rays.
Body covered with large ſcales, eaſily dropping off.

SURMULLET.

I. The RED SURMULLET.

Τρίγλη? *Ariſt. Hiſt. an. lib.* ii. *Oppian Halieut.* I. 590.
Τρίγλη Σώφρων. *Athenæus. lib.* vii. 325.
Mullus. *Ovid. Halieut.* 123. *Plinii lib.* ix. *c.* 17.
Triglia. *Salvian.* 235.
Le Rouget barbé, Surmurlet. *Belon.* 170.
Mullus barbatus. *Rondel.* 290. *Geſner piſc.* 565.
Petermanneken, Goldeken. *Schonevelde.* 47.
Mullus *Bellonii. Wil. Icth.* 285. *Raii ſyn. piſc.* 90.
Trigla capite glabro, cirris geminis in maxilla inferiore. *Arted. ſynon.* 71.
Mullus cirris geminis, corpore rubro. *Lin. ſyſt.* 495. *Gronov. Zooph. No.* 286.

THIS fiſh was highly eſteemed by the *Romans*, and bore an exceeding high price. The capricious epicures of *Horace*'s* days, valued it in proportion to its ſize, not that the larger were more delicious, but that they were more difficult to be got. The price that was given for one in the time of *Juvenal*, and *Pliny*, is a ſtriking evidence of the luxury and extravagance of the age:

Mullum *ſex millibus emit*
Æquantem ſane paribus ſeſtertia libris **.

The laviſh ſlave
Six thouſand pieces for a Mullet gave,
A ſeſterce for each pound. DRYDEN.

* *Sat. lib.* ii. *ſ.* ii. 33. ** *Juvenal. Sat.* iv. 48 l. 8 s. 9 d.

But

But *Aſinius Celer* *, a man of conſular dignity, gave a ſtill more unconſcionable ſum, for he did not ſcruple beſtowing eight thouſand nummi, or ſixty-four pounds eleven ſhillings and eight-pence, for a fiſh of ſo ſmall a ſize as the mullet; for according to *Horace*, a *Mullus trilibris*, or one of three pounds, was a great rarity; ſo that *Juvenal*'s ſpark muſt have had a great bargain in compariſon of what *Celer* had.

But *Seneca* ſays that it was not worth a farthing, except it died in the very hand of your gueſt: that ſuch was the luxury of the times, that there were ſtews even in the eating rooms, ſo that the fiſh could at once be brought from under the table, and placed on it: that they put the mullets in tranſparent vaſes, that they might be entertained with the various changes of its rich color while it lay expiring **. *Apicius* †, a wonderful genius for luxurious inventions, firſt hit upon the method of ſuffocating them in the exquiſite *Carthaginian* ‡ pickle, and afterwards procured a rich ſauce from their livers. This is the ſame gentleman whom *Pliny*, in another place, honors with the title of *Nepotum omnium altiſſimus gurges* §, an expreſſion too forcible to be rendered in our language

* *Plin. lib.* ix, *c.* 17.

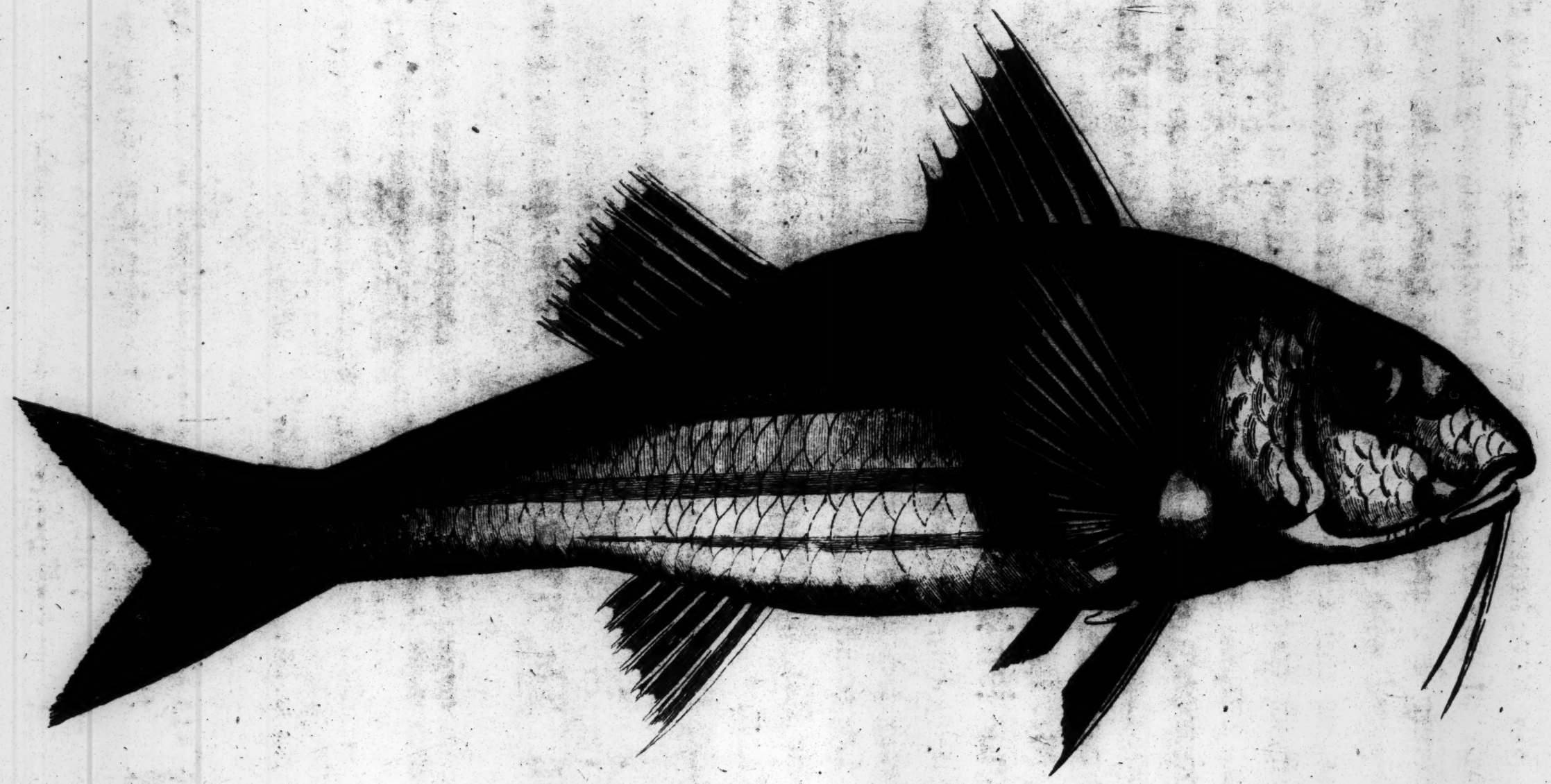
** *In cubili natant piſces: et ſub ipſa menſa capitur, qui ſtatim transferitur in menſam: parum videtur recens* mullus *niſi qui in convivæ manu moritur. Vitreis ollis incluſi offeruntur, et obſervatur morientium color, quem in multas mutationes luctante ſpiritu vertit.* Seneca. Nat. Quæſt. lib. iii. c. 16.

† *Ad omne luxus ingenium mirus.*

‡ *Garum Sociorum*, vide p. 222.

§ *Lib.* x. *c.* 48.

SURMULLET.



P. Mazell del. & Sculp.

We have heard of this ſpecies being taken on the coaſt of *Scotland*, but had no opportunity of examining it; and whether it is found in the weſt of *England* with the other ſpecies, or variety, we are not at this time informed. *Salvianus* makes it a diſtinct ſpecies, and ſays, that it is of a purple color, ſtriped with golden lines, and that it did not commonly exceed a palm in length: no wonder then that ſuch a prodigy as one of ſix pounds ſhould ſo captivate the fancy of the *Roman* epicure.

Mr. *Ray* eſtabliſhes ſome other diſtinctions, ſuch as the firſt dorſal fin having nine rays, and the color of that fin, the tail, and the pectoral fins, being of a very pale purple.

On theſe authorities we form different ſpecies of theſe fiſh, having only examined what *Salvianus* and Mr. *Ray* call the *Mullus major*, which we deſcribe under the title of

II. The STRIPED SURMULLET.

Mullus major. *Salvian.* 236.
Mullus major noſter et *Salviani.* 95. *Cornubienſibus.*
A Surmullet. *Wil. Icth.* 285. *Raii ſyn. piſc.* 91.
Trigla capite glabro, lineis utrinque quatuor luteis, longitudinalibus, parallelis. *Arted. ſynon.* 72.
Mullus cirris geminis lineis luteis longitudinalibus. *Lin. ſyſt.* 496.

THIS ſpecies was communicated to us by Mr. *Pitfield* of *Exeter*: its weight was two pounds and an half; its length was fourteen inches; the thickeſt circumference eleven. It appears on the coaſt

coaſt of *Devonſhire* in *May*, and retires about *November*.

The head ſteep: the noſe blunt: the body thick: the mouth ſmall: the lower jaw furniſhed with very ſmall teeth: in the roof of the mouth is a rough hard ſpace: at the entrance of the gullet above is a ſingle bone, and beneath are a pair, each with echinated ſurfaces, that help to comminute the food before it paſſes down.

From the chin hung two beards, two inches and an half long.

The eyes large: the irides purple: the head and covers of the gills very ſcaly.

The firſt dorſal fin was lodged in a deep furrow, and conſiſted of ſix ſtrong, but flexible rays; the ſecond of eight; the pectoral fins of ſixteen; the ventral of ſix branched rays; the anal of ſeven: the tail is much forked.

The body very thick, and covered with large ſcales; beneath them the color was a moſt beautiful roſy red*; the changes of which, under the thin ſcales, gave that entertainment to the *Roman* epicures as above mentioned: the ſcales on the back and ſides were of a dirty orange; thoſe on the noſe a bright yellow: the tail a reddiſh yellow.

The ſides were marked lengthways with two lines of a light yellow color: theſe with the red color of the dorſal fins, and the number of their rays, Mr. *Ray* makes the character of the *Corniſh Surmullet*: theſe are notes ſo liable to vary by accident, that till

* This color is moſt vivid during ſummer.

we receive further informations from the inhabitants of our *Weſtern* coaſts, where theſe fiſh are found, we ſhall remain doubtful whether we have done right in ſeparating this from the former, eſpecially as *Doctor Gronovius* has pronounced them to be only varieties.

Genus XXXII. Noſe ſloping.
Head covered with ſtrong bony plates.
Seven branchioſtegous rays.
Three ſlender appendages at the baſe of the pectoral fins.

GURNARD.

I. The GREY GURNARD.

Gurnatus ſeu Gurnardus griſeus, the Grey Gurnard. *Will. Icth.* 279. *Raii ſyn. piſc.* 88.
Trigla vario roſtro diacantho, aculeis geminis ad utrumque oculum. *Arted. ſynon.* 74.
Trigla Gurnardus, Tr. digitis ternis dorſo maculis nigris rubriſque. *Lin. ſyſt.* 497. *Gronov. Zooph. No.* 283.

THE noſe pretty long, and ſloping: the end bifurcated, and each ſide armed with three ſhort ſpines.

The eyes very large; above each were two ſhort ſpines: the forehead and covers of the gills ſilvery; the laſt finely radiated.

The teeth ſmall, placed in the lower and upper jaws, in the roof of the mouth, and baſe of the tongue.

Noſtrils minute, and placed on the ſides of the noſe.

On the extremity of the gill covers was a ſtrong, ſharp, and long ſpine: beneath that, juſt above the pectoral fins, another.

The firſt dorſal fin conſiſted of eight ſpiny rays; the ſides of the three firſt tuberculated.

The ſecond dorſal fin of nineteen ſoft rays: both fins lodged in a groove, rough on each ſide, but not ſerrated.

The pectoral fins tranſparent, and ſupported by ten rays, bifurcated from their middle: the three beards at their baſe as uſual.

The ventral fins had ſix rays, the firſt ſpiny, and the ſhorteſt of all.

The anal fin nineteen, each ſoft.

The tail bifurcated.

The lateral line very prominent, and ſtrongly ſerrated.

The back, tail, and a ſmall ſpace beneath the ſide line, were of a deep grey, covered with ſmall ſcales, and in parts ſpotted with white; the belly ſilvery. We could not perceive any yellow ſpots, as Mr. *Ray* mentions, but poſſibly they vary.

II. The

II. The RED GURNARD.

Κόκκυξ? *Ariſt. Hiſt. an. lib.* iv. *c.* 9. *Oppian Halieut.* I. 97.

Κοκκυξ ἐρυθρος. *Athenæus lib.* vii. 309.

Peſce capone, Cocco, Organo. *Salvian.* 191.

Le Rouget. *Belon.* 199.

Cuculus. *Rondel.* 287. *Geſner piſc.* 305.

Smiedecknecht, Kurre-fiſche. *Schonevelde.* 32.

Red Gurnard, or Rotchet. *Wil. Icth.* 281. *Raii ſyn. piſc.* 89.

Trigla tota rubens, roſtro parum bicorni, operculis branchiarum ſtriatis. *Arted. ſynon.* 74.

Trigla cuculus. Tr. digitis ternis, linea laterali mutica. *Lin. ſyſt.* 497.

THIS ſpecies agrees in its general appearance with the tub fiſh; but in theſe particulars differs.

The covers of the gills are radiated: the ſpines are leſs and ſhorter in thoſe of the red gurnard.

The fins and body are of a fuller red: the ſcales are larger: the head leſs: the pectoral fins are ſhorter, and edged with purple, not with blue.

III. The PIPER.

Λυρα? *Ariſt. Hiſt. an. lib.* iv. *c.* 9.
Lyra. *Rondel.* 298. *Geſner piſc.* 516.
The Piper. *Wil. Icth.* 282. *Raii ſyn. piſc.* 89.
Trigla roſtro longo diacantho, naribus tubuloſis. *Arted. ſyn.* 74.
Trigla Lyra. Tr. digitis ternis, naribus tubuloſis. *Lin. ſyſt.* 496.

THIS ſpecies is frequently taken on the weſtern coaſts of this kingdom, and eſteemed an excellent fiſh.

The weight of one which was communicated to us by Mr. *Pitfield**, was three pounds and an half; the thickeſt circumference thirteen inches, the leſt, which was next the tail, only three: the length near two feet.

The head was very large, and that part of the body next to it very thick: the noſe divided into two broad plates, each terminated with three ſpines: on the inner corner of each eye is a ſtrong ſpine: the bony plates of the head terminate on each ſide with another.

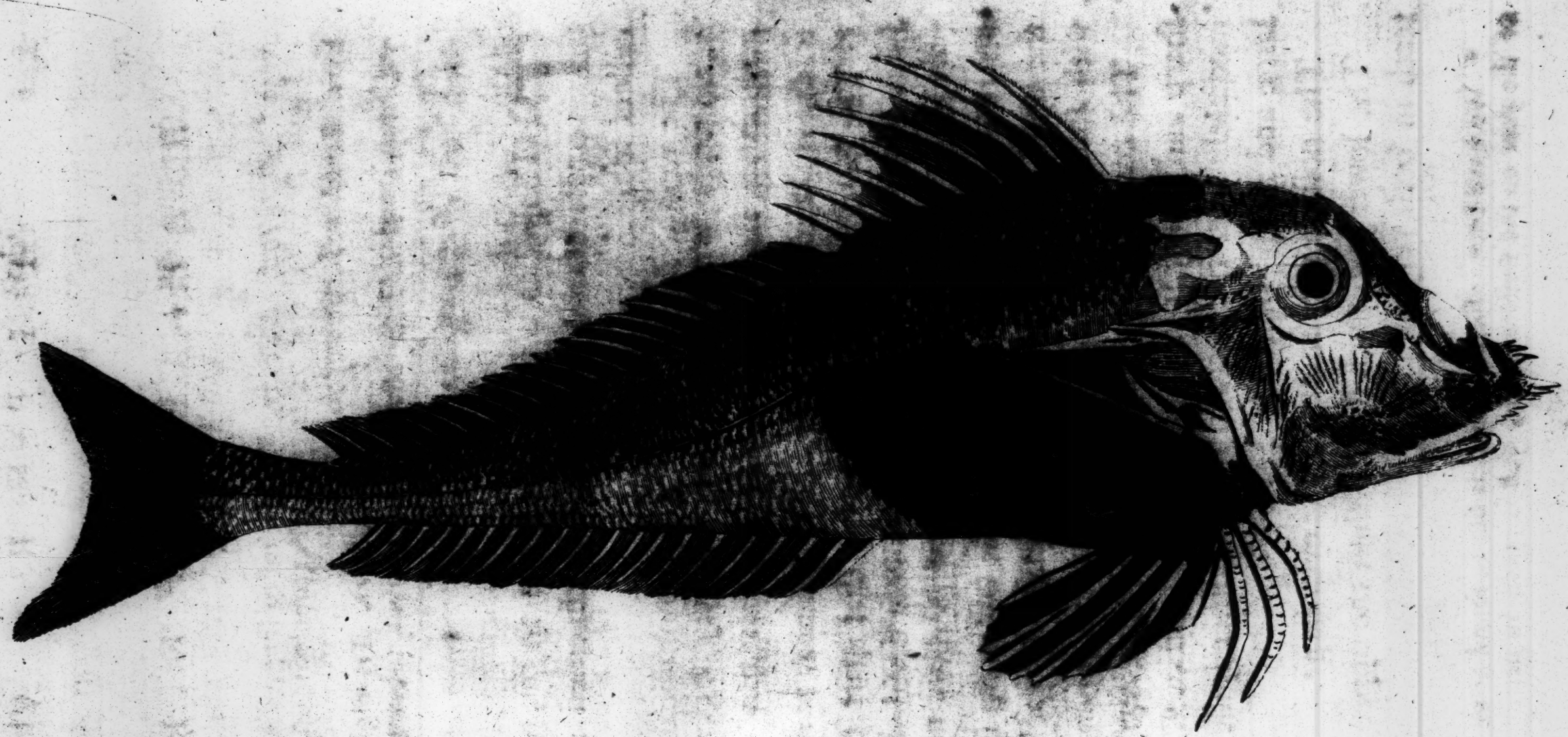
The covers of the gills are armed with one very ſharp and ſtrong ſpine, and are prettily ſtriated: immediately over the pectoral fin is another ſpine very large and ſharp pointed.

The noſtrils very minute: the eyes large.

The lower jaw much ſhorter than the upper: the teeth in both very minute.

* We have been informed that this fiſh is found at all times of the year on the weſtern coaſts, and is taken in nets.

The



G. Hautier pinx.

P. Mazell fe.

B B

The firſt dorſal fin conſiſted of nine very ſtrong ſharp ſpines, the ſecond of which is the longeſt; the ſecond fin begins juſt behind the firſt, and conſiſts of eighteen ſoft rays: the pectoral fins were long, and had twelve branched rays; the ventral fins ſix, very ſtrong and thick: the anal eighteen, the firſt ſpiny: the tail ſmall, in proportion to the ſize of the fiſh, and forked.

The back on each ſide the dorſal fin was armed with a ſet of ſtrong and very large ſpines, pointing towards the tail like the teeth of a ſaw.

The ſcales were ſmall, but very hard and rough: the lateral line bent a little at its beginning, that went ſtrait to the tail, and was almoſt ſmooth.

IV. The TUB FISH.

Hirundo *Aldrov.* the Tub-fiſh, *Cornub. Wil. Icth.* 280. *Raii ſyn. piſc.* 88.

Trigla capite aculeato, appendicibus utrinque tribus ad pinnas pectorales. *Arted. ſynon.* 73.

Trigla hirundo. Tr. digitis ternis, linea laterali aculeata. *Lin. ſyſt.* 497.

Knorrhane, Knoding, Knot, Smed. *Faun. ſuec. No.* 340.

THIS ſpecies is of a more ſlender form than the preceding.

The pupil of the eye is green: on the inner corner of each are two ſmall ſpines. But what at once diſtinguiſhes this from the other ſpecies is the breadth and colors of the pectoral fins, which are very broad, of a pale green, moſt beautifully edged, and ſpotted with rich deep blue.

The dorſal fins are lodged between two rows of ſpines, of a ſerrated form: the back is of a greeniſh caſt: the ſide line is rough: the ſides are tinged with red; the belly white.

Theſe fiſh are found on the coaſt of *Cornwall*. We have alſo taken them off *Angleſea*.

V. The STREAKED GURNARD.

Cuculus lineatus, the Streaked Gurnard. *Raii ſyn. piſc.* 165. *fig.* 11.

THIS is one of the *Corniſh* fiſh communicated to Mr. *Petiver* by Mr. *Jago*. He ſays the head is large, and diſtinguiſhed with ſtellated marks; the eyes great; the covering of the gills thorny; the mouth ſmall, and without teeth. By the figure the noſe ſeems not to be bifurcated. The pectoral fins large, and ſpotted, beneath them three filaments: the color of the body red: the belly white, marked with many ſtreaks, pointing downwards, from the back.

Mr. *Jago* imagines it to be the *Mullis imberbis* of *Rondeletius*. *Wil. Icth.* 278.

Sect. IV. ABDOMINAL.

Genus XXXIII. Eyes in the upper part of the head.
Aperture to the gills cloſed below.
Several beards on the end of the upper jaw.
Body of almoſt an equal thickneſs.
One dorſal fin. LOCHE.

I. The LOCHE.

La Loche franche. *Belon.* 321.
Cobitis barbatula. *Rondel. fluviat.* 204.
Cobitis fluviatilis barbatula. *Geſner piſc.* 404.
Smerling, Smerle. *Schonevelde.* 31.
Loche, or Groundling. *Wil. Icth.* 265. *Raii ſyn. piſc.* 124.
Cobitis tota glabra maculoſa, corpore ſubtereti. *Arted. ſynon.* 2.
Cobitis Barbatula. C. cirris ſex capite inermi compreſſo. *Lin. ſyſt.* 499. *Gronov. Zooph. No.* 202.
Gronling. *Faun. ſuec. No.* 341.
Grundel. *Kram.* 396. *Wulff. Boruſs. No.* 40.

THE loche is found in ſeveral of our ſmall rivers, keeping at the bottom on the gravel, and is on that account, in ſome places, called the *Groundling*: it is frequent on the ſtream near *Ameſbury*, in *Wiltſhire*, where the ſportſmen, thro' frolick, ſwallow it down alive in a glaſs of white wine.

The largeſt we ever heard of was four inches and three quarters in length, but they ſeldom arrive to that ſize. Deſcr.

The mouth is ſmall, placed beneath, and has no teeth: on the upper mandible are ſix ſmall beards, one at each corner of the mouth, and four at the end of the noſe.

The dorſal fin conſiſts of eight rays; the pectoral of eleven; the ventral of ſeven; the anal of ſix: the tail is broad, and has ſixteen or ſeventeen rays.

Color. The body is ſmooth and ſlippery, and almoſt of the ſame thickneſs: the color of the head, back, and ſides, is in ſome white, in others of a dirty yellow, very elegantly marked with large ſpots, conſiſting of numberleſs minute black ſpecks: the pectoral, dorſal, and caudal fins are alſo ſpotted: the belly and ventral fins of a pure white: the tail broad, and a little rounded.

Genus

Genus XXXIV. Branchioſtegous rays unequal in number.
Two dorſal fins; the ſecond thick, and without rays. SALMON.

*

With teeth.

I. The SALMON.

Salmo *Plinii lib.* ix. *c.* 18. *Auſonius. Moſel.* 97.
Salmone. *Salvian.* 100.
Le Saulmon. *Belon.* 271.
Salmo. *Rondel. fluviat.* 167. *Geſner piſc.* 824. *Schonevelde.* 64.
Salmon. *Wil. Icth.* 189. *Raii ſyn. piſc.* 63.
Salmo roſtro ultra inferiorem maxillam ſæpe prominente. *Arted. ſynon.* 22.
Salmo Salar. *Lin. ſyſt.* 509. *Gronov. Zooph. No.* 369.
Lax. *Faun. ſuec. No.* 122.
Lachſs. *Wulff. Boruſs. No.* 42.

THE ſalmon is a northern fiſh, being unknown in the *Mediterranean* ſea, and other warm climates: it is found in *France* in ſome of the rivers that empty themſelves into the ocean*, and north as far as *Greenland*; whether it reaches *America* we are not at this time aſſured: *Charlevoix*, *Lauſon*, and *Cateſby* do not mention it; nor have we any authority for its being found there, except that of the romantic *Lahontan*. Salmons are taken in the rivers of *Kamtſchatka* **, but whether they are of the ſame ſpecies with the *European* kind is not very certain.

* *Rondel. fluviat.* 167. ** *Hiſt. Kamtſch.* 143.

They

They are in ſeveral countries a great article of commerce, being cured different ways, by ſalting, pickling, and drying: there are ſtationary fiſheries in *Iceland*, *Norway* *, and the *Baltic*, but we believe no where greater than thoſe at *Colraine* in *Ireland*; and in *Great-Britain* at *Berwick*, and in ſome of the rivers of *Scotland*.

The ſalmon was known to the *Romans* but not to the *Greeks*: *Pliny* ſpeaks of it as a fiſh found in the rivers of *Aquitaine*: *Auſonius* enumerates it among thoſe of the *Moſel*.

Nec te puniceo rutilantem viſcere Salmo
Tranſierem, latæ cujus vaga verbera caudæ
Gurgite de medio ſummas referuntur in undas,
Occultus placido cum proditur æquore pulſus.
Tu loricato ſquamoſus pectore, frontem
Lubricus, et dubiæ facturus fercula cænæ,
Tempora longarum fers incorrupta morarum,
Præſignis maculis capitis, cui prodiga nutat
Alvus, opimatoque fluens abdomine venter.

Nor I thy ſcarlet belly will omit,
O Salmon, whoſe broad tail with whiſking ſtrokes
Bears thee up from the bottom of the ſtream
Quick to the ſurface; and the ſecret laſh
Below, betrays thee in the placid deep.
Arm'd in thy flaky mail, thy gloſſy ſnout
Slippery eſcapes the fiſher's fingers; elſe
Thou makeſt a feaſt for niceſt judging palates:
And yet long uncorrupted thou remaineſt:
With ſpotted head remarked, and wavy ſpread,
Of paunch immenſe o'erflowing wide with fat.

ANONYMOUS.

Aſcends rivers. The ſalmon is a fiſh that lives both in the ſalt and freſh waters, quitting the ſea at certain ſeaſons for

* There was about the year 1578 a pretty conſiderable ſalmon fiſhery at *Cola*, in *Ruſſian Lapland*. *Hackluyt. voy.* I. 416.

the

the ſake of depoſiting its ſpawn in ſecurity, in the gravelly beds of rivers remote from their mouths. There are ſcarce any difficulties but what they will overcome, in order to arrive at places fit for their purpoſe: they will aſcend rivers hundreds of miles, force themſelves againſt the moſt rapid ſtreams, and ſpring with amazing agility over cataracts of ſeveral feet in height. Salmon are frequently taken in the *Rhine* as high up as *Baſil*; they gain the ſources of the *Lapland* rivers* in ſpite of their torrent-like currents, and ſurpaſs the perpendicular falls of *Leixſlip***, *Kennerth*†, and *Pont aberglaſtyn*‡; theſe laſt feats we have been witneſs to, and ſeen the efforts of ſcores of fiſh, ſome of which ſucceeded, others miſcarried during the time of our ſtay. Salmon leaps.

It may here be proper to contradict the vulgar error of their taking their tail in their mouth when they attempt to leap; ſuch as we ſaw, ſprung up quite ſtrait, and with a ſtrong tremulous motion.

Other particulars relating to the natural hiſtory of this fiſh, we ſhall relate in our accounts of the fiſheries, either from our own obſervations, or from ſuch as have been communicated to us from different places: the fulleſt we have been favored with is from Mr. *Potts*, of *Berwick*, to whom the publick is indebted for the following very curious hiſtory of the ſalmon fiſhery on the *Tweed*. *Tweed* fiſhery.

* *Scheff. Lap.* 139.

** Near *Dublin*.

† On the *Tivy* in *South Wales*, which *Michael Drayton* celebrates in his *Polyolbion* on this account.

‡ Amidſt *Snowdon* hills, a wild ſcene in the ſtyle of *Salvator Roſa*.

At the latter end of the year, or in the month of *November*, the ſalmon begin to preſs up the rivers as far as they can reach, in order to ſpawn; when that time approaches they ſearch for a place fit for the purpoſe: the male and female unite in forming a proper receptacle for it in the ſand or gravel, about the depth of eighteen inches; in this the female depoſits her ſpawn, the male his milt, which they cover carefully, as it is ſaid, with their tails, for after ſpawning they are obſerved to have no ſkin on that part.

Spawning.

The ſpawn lies buried till ſpring, if not diſturbed by violent floods; but the ſalmon haſten to ſea as ſoon as they are able, to purify and cleanſe themſelves, and to recover their ſtrength; for after ſpawning they become very poor and lean, and then are called *Kipper*.

About the latter end of *March* the ſpawn begins to exclude the young, which gradually increaſe to the length of four or five inches, and are then termed *Smelts* or *Smouts*: about the beginning of *May* the river is full of them; it ſeems to be all alive; there is no having an idea of the numbers without ſeeing them; but a ſeaſonable flood then hurries them all to the ſea, ſcarce any or very few being left in the river.

About the middle of *June* the earlieſt of the fry begin to drop, as it were, into the river again from the ſea, at that time about twelve, fourteen, or ſixteen inches, and by a gradual progreſs, increaſe in number and ſize till about the end of *July*, which is at *Berwick* termed the height of *Gilſe* time, the

name

name given to the fiſh at that age: the end of *July*, or beginning of *Auguſt* they leſſen in number, but encreaſe in ſize, ſome being ſix, ſeven, eight, or nine pounds in weight; this appears to be a ſurpriſing quick growth, yet we have received from a gentleman at *Warrington*, an inſtance ſtill more ſo: a kipper ſalmon weighing 7lb. three quarters, taken on the 7th of *Febrùary*, being marked with a ſciſſars on the back, fin, and tail, and turned into the river, was again taken the 17th of *March* following, and then was found to weigh 17lb. and a half. Quick growth.

The capture in the *Tweed*, about the month of *July*, is prodigious; in a good fiſhery, often a boat load, and ſometimes near two, are taken in a tide: ſome few years ago there were above ſeven hundred fiſh taken at one hawl, but from fifty to a hundred is very frequent: the coopers in *Berwick* then begin to ſalt both *Salmon* and *Gilſes* in pipes, and other large veſſels, and afterwards barrel* them to ſend abroad, having then far more than the *London* markets can take off their hands. Capture.

Moſt of the ſalmon taken before *April*, or to the ſetting in of the warm weather, is ſent freſh to *London* in baſkets, unleſs now and then the veſſel is diſappointed by contrary winds, of ſailing immediately; in that caſe the fiſh is brought aſhore again to the coopers offices, and boiled, pickled, and kitted, and ſent to the *London* markets by the ſame ſhip, and freſh ſalmon put in the baſkets in lieu of the ſtale ones. At the beginning of the ſeaſon, when a ſhip

* The ſalmon barrel holds above forty-two gallons, wine meaſure.

is on the point of ſailing, a freſh clean ſalmon will
Price. ſell from a ſhilling to eighteen pence a pound, and moſt of the time that this part of the trade is carried on, the prices are from five to nine ſhillings per ſtone *, the value riſing and falling according to the plenty of fiſh, or the proſpect of a fair or foul wind. Some fiſh are ſent in this manner to *London* the latter end of *September*, when the weather grows cool, but then the fiſh are full of large roes, grow very thin bellied, and are not eſteemed either palatable or wholeſome.

The price of freſh fiſh in the month of *July*, when they are moſt plentiful, has been known to be as low as 8*d.* per ſtone, but laſt year never leſs than 16*d.* and from that to 2*s.* 6*d.*

Seaſon. The ſeaſon for fiſhing in the *Tweed* begins *November* the 30th, but the fiſhermen work very little till after *Chriſtmas*; it ends on *Michaelmas-Day*; yet the corporation of *Berwick* (who are conſervators of the river) indulge the fiſhermen with a fortnight paſt that time, on account of the change of the ſtyle.

There are on the river forty-one conſiderable fiſheries extending upwards, about fourteen miles from the mouth (the others above being of no great value) which are rented for near 5400*l.* per annum. The expences attending the ſervants wages, nets, boats, &c. amount to 5000*l.* more, which together makes up the ſum 10400*l.* Now in conſequence

* A ſtone of ſalmon weighs 18 lb. 10 oz. $\frac{1}{2}$, or in other terms, four ſtones, or fifty-ſix pounds avoirdupoiſe, is only three ſtones, or forty-two pounds, fiſh weight at *Berwick*.

the

the produce muſt defray all, and no leſs than twenty times that ſum of fiſh will effect it, ſo that 208000 ſalmon muſt be caught there one year with another.

There is a misfortune attending the river *Tweed*, which is worthy a parlementary remedy; for there is no law for preſerving the fiſh in it during the fence months, as there is in the caſe of many other *Britiſh* rivers. This being the boundary between the two kingdoms, part of it belongs to the city of *Berwick*, and the whole north ſide (beginning about two miles from the town) is entirely *Scotch* property. From ſome diſagreement between the parties they will not unite for the preſervation of the fiſh, ſo that in ſome fiſheries on the north ſide they continue killing ſalmon the whole winter, when the death of one fiſh is the deſtruction of thouſands.

The legiſlature began very early to pay attention to this important article: by the 13th *Edward* Iſt. there is an act which prohibits the capture of the ſalmon from the Nativity of our Lady to St. *Martin*'s Day, in the waters of the *Humber*, *Owſe*, *Trent*, *Done*, *Arre*, *Derwent*, *Wharfe*, *Nid*, *Yore*, *Swale*, and *Tees*; and other monarchs in after-times, provided in like manner for the ſecurity of the fiſh in other rivers.

Scotland poſſeſſes great numbers of fine fiſheries on both ſides of that kingdom. The ſalmon are cured in the ſame manner as at *Berwick*, and a great quantity is ſent to *London* in the ſpring; but after that time the adventurers begin to barrel and export them to foreign countries: but we believe that commerce *Scotland.*

commerce is far less lucrative than it was in former times, partly owing to the great encrease of the *Newfoundland* fishery, and partly to the general relaxation of the discipline of abstinence in the *Romish* church.

Ireland. *Ireland* (particularly the north) abounds with this fish: the most considerable fishery is at *Cranna*, on the river *Ban*, about a mile and an half from *Coleraine*. When I made the tour of that hospitable kingdom in 1754, it was rented by a neighboring gentleman for 620*l.* a year, who assured me that the tenant, his predecessor, gave 1600*l.* per ann. and was a much greater gainer by the bargain for the reasons before-mentioned, and on account of the number of poachers who destroy the fish in the fence months.

The mouth of this river faces the north, and is finely situated to receive the fish that roam along the coast, in search of an inlet into some fresh water, as they do all along that end of the kingdom which opposes itself to the northern ocean. We have seen near *Ballicastle*, nets placed in the sea at the foot of the promontories that jut into it, which the salmon strike into as they are wandering close to shore, and numbers are taken by that method.

In the *Ban* they fish with nets eighteen score yards long, and are continually drawing night and day the whole season, which we think lasts about four months, two sets of sixteen men each alternately relieving one another. The best drawing is when the tide is coming in: we were told that at a single draught there were once eight hundred and forty fish taken.

A few

A few miles higher up the river is a ware, where a conſiderable number of fiſh that eſcape the nets are taken. We were lately informed, that in the year 1760 about 320 tons were taken in the *Cranna* fiſhery.

The ſalmon are cured in this manner: they are firſt ſplit, and rubbed with fine ſalt; and after lying in pickle in great tubs, or reſervoirs, for ſix weeks, are packed up with layers of coarſe brown *Spaniſh* ſalt in caſks, ſix of which make a ton. Theſe are exported to *Leghorn* and *Venice* at the price of twelve or thirteen pounds per ton, but formerly from ſixteen to twenty-four pounds each.

The ſalmon is a fiſh ſo generally known, that a very brief deſcription will ſerve. The largeſt we ever heard of weighed ſeventy-four pounds. The color of the back and ſides are grey, ſometimes ſpotted with black, ſometimes plain: the covers of the gills are ſubject to the ſame variety: the belly ſilvery: the noſe ſharp pointed: the end of the under jaw in the males often turns up in form of a hook; ſometimes this curvature is very conſiderable: it is ſaid that they loſe this hook when they return to the ſea. Deſcr.

The teeth are lodged in the jaws and on the tongue, and are ſlender, but very ſharp.

The tail is a little forked.

II. The GREY.

The Grey, i. e. cinereus ſeu Griſeus. *Wil. Icth.* 193. *Raii ſyn. piſc.* 63.

Salmo maculis cinereis, caudæ extremo æquali. *Arted. ſynon.* 23.

Salmo eriox. *Lin. ſyſt.* 509.

Gralax. *Faun. ſuec. No.* 346.

Lachſs-forellen mit Schwarzgrauen flecken oder punktchens. *Wulff. Boruſſ. No.* 43.

WE are uncertain whether this is not a meer variety of the ſalmon; but on the authority of Mr. *Ray*, we deſcribe them ſeparate. He ſays it is a very ſtrong fiſh, that it does not aſcend the freſh waters till *Auguſt*, when it ruſhes up with great violence, that it is rarely taken, and not much known.

We ſaw one laſt ſummer caught near *Gloddaeth*, in *Caernarvonſhire*, which weighed twenty-two pounds: the body was much deeper than that of the ſalmon; the head larger: the irides were ſilvery: the back, firſt dorſal fin, the ſides above the lateral line, were of a deep grey, ſpotted with numbers of dark purpliſh ſpots: the belly ſilvery: the tail quite even at the end. The fiſhermen called it a ſhe ſalmon.

Mr. *Ray* deſcribes it among the fiſh of the trout kind, communicated to him by Mr. *Johnſon*, who made his obſervations in the north of *England*: but it is not peculiar to that part, for we have heard of its being taken in the river *Wye*, where it is known by the name of *Sewin*, or *Shewin*.

III. The BULL TROUT.

Trutta taurina, apud nos in *Northumbria* a Bull-trout. *Charlton. ex. piſc.* 36.

Trutta Salmonata, the Salmon Trout, Bull-trout, or Scurf. *Raii ſyn. piſc.* 63. *Wil. Icth.* 193. 198.

Salmo latus, maculis rubris nigriſque, cauda æquali. *Arted. ſynon.* 24.

Salmo trutta. S. ocellis nigris, iridibus brunneis, pinna pectorali punctis ſex. *Lin. ſyſt.* 509. *Gronov. Zooph. No.* 367.

Orlax, Borting. *Faun. ſuec. No.* 347.

THIS ſpecies is in ſome places called the bull trout, from the thickneſs and ſhortneſs of its head. Its fleſh is white, and leſs delicate than that of others of this genus.

It ſeldom exceeds twenty inches in length: the back is aſh-colored: the head and ſides are marked with large black ſpots, encircled with brown.

The firſt dorſal fin is ſpotted with black: the pectoral fin marked with oblong ſpots: the belly white.

The tail is even at the end.

IV. The TROUT.

Salar. *Auſonius Moſel.* 88.
Salar et varius, Trotta. *Salvian.* 96.
La Truitte. *Belon.* 274.
Trutta fluviatilis. *Rondel. fluviat.* 169. *Geſner piſc.* 1002.
Foren, Forellen. *Schonevelde.* 77.
A Trout. *Wil. Icth.* 199. *Raii ſyn. piſc.* 65.
S. maculis rubris, maxilla inferiore longiore. *Arted. ſynon.* 23.
Salmo Fario. *Lin. ſyſt.* 509.
Laxoring, Forell, Stenbit, *Faun. ſuec. No.* 348.

IT is matter of ſurprize that this common fiſh has eſcaped the notice of all the antients, except *Auſonius*: it is alſo ſingular, that ſo delicate a ſpecies ſhould be neglected at a time when the folly of the table was at its height; and that the epicures ſhould overlook a fiſh that is found in ſuch quantities in the lakes of their neighborhood, when they ranſacked the univerſe for dainties. The milts of *Muræna* were brought from one place; the livers of *Scari* from another *; and *Oyſters* even from ſo remote a ſpot as our *Sandwich* **: but there was, and is a faſhion in the article of good living. The *Romans* ſeem to have deſpiſed the trout, the piper, and the doree; and we believe Mr. *Quin* himſelf would have reſigned the rich paps of a pregnant ſow†, the heels of camels ‡, and the tongues of *Flamingos* §, tho' dreſſed by *Heliogabalus*'s cooks, for a good jowl of ſalmon with lobſter ſauce.

* *Suetonius, vita* Vitellii. ** *Juvenal Sat.* iv. 141. † *Martial. lib.* xiii. *epig.* 44. ‡ *Lamprid. vit. Heliogab.* § *Martial. lib.* xii. *epig.* 71.

When

When *Auſonius* ſpeaks of this fiſh, he makes no euloge on its goodneſs, but celebrates it only for its beauty.

Purpureiſque SALAR *ſtellatus Tergora guttis.*

With purple ſpots the *Salar's* back is ſtained.

Theſe marks point out the ſpecies he intended: what he meant by his *Fario* is not ſo eaſy to determine: whether any ſpecies of trout, of a ſize between the *ſalar* and the ſalmon; or whether the ſalmon itſelf, at a certain age, is not very evident.

Teque inter geminos ſpecies, neutrumque et utrumque,
Qui nec dum SALMO, *nec* SALAR *ambiguuſque.*
Amborum medio Fario intercepter ſub ævo.

Salmon or *ſalar*, I'll pronounce thee neither;
A doubtful kind, that may be none, or either,
Fario, when ſtopt in middle growth.

In fact the colors of the trout, and its ſpots, vary greatly in different waters, and in different ſeaſons; yet each may be reduced to one ſpecies. In *Llyndivi*, a lake in *South Wales*, are trouts called *Coch y dail*, marked with red and black ſpots as big as ſixpences; others unſpotted, and of a reddiſh hue, that ſometimes weigh near ten pounds, but are bad taſted.

In *Lough Neagh* in *Ireland*, are trouts called there *Buddaghs*, which I was told ſometimes weighed thirty pounds, but it was not my fortune to ſee any during my ſtay in the neighbourhood of that vaſt water.

Trouts (probably of the ſame ſpecies) are alſo taken in *Hulſewater*, a lake in *Cumberland*, of a much ſuperior ſize to thoſe of *Lough Neagh*. Theſe are ſuppoſed to be the ſame with the trout of the lake of of *Geneva*, a fiſh I have eaten more than once, and think but a very indifferent one.

Crooked trouts. In the river *Eynion*, not far from *Machyntleth*, in *Merionethſhire*, and in one of the *Snowdon* lakes, are found a variety of trout, which are naturally deformed, having a ſtrange crookedneſs near the tail, reſembling that of the perch before deſcribed. We dwell the leſs on theſe monſtrous productions, as our friend the Hon. *Daines Barrington*, has already given an account of them in an ingenious diſſertation on ſome of the *Cambrian* fiſh, publiſhed in the *Philoſophical Tranſactions* of the year 1767.

Trouts are moſt voracious fiſh, and afford excellent diverſion to the angler: the paſſion for the ſport of angling is ſo ſtrong in the neighborhood of *London*, that the liberty of fiſhing in ſome of the ſtreams in the adjacent counties, is purchaſed at the rate of ten pounds per annum.

Theſe fiſh ſhift their quarters to ſpawn, and, like ſalmon, make up towards the heads of rivers to depoſit their roes. The under jaw of the trout is ſubject, at certain times, to the ſame curvature as that of the ſalmon.

Deſcr. A trout taken in *Llynallet*, in *Denbighſhire*, which is famous for an excellent kind, meaſured ſeventeen inches, its depth three and three quarters, its weight one pound ten ounces: the head thick, the noſe rather ſharp: the upper jaw a little longer than the lower;

lower; both jaws, as well as the head, were of a pale brown, blotched with black: the teeth ſharp and ſtrong, diſpoſed in the jaws, roof of the mouth and tongue, as is the caſe with the whole genus, except the *Gwyniad*, which is toothleſs, and the *Grayling*, which has none on its tongue.

The back was duſky; the ſides tinged with a purpliſh bloom, marked with deep purple ſpots, mixed with black, above and below the ſide line which was ſtrait: the belly white.

The firſt dorſal fin was ſpotted; the ſpurious fin brown, tipped with red; the pectoral, ventral, and anal fins, of a pale brown; the edges of the anal fin white: the tail very little forked when extended.

V. The SAMLET.

Le Tacon? *Belon.* 275.
Salmulus, *Herefordiæ* Samlet dictus. *Wil. Icth.* 192.
Salmulus, the Samlet *Herefordienſibus*, Branlin et Fingerin *Eboracenſibus*. *Raii ſyn. piſc.* 63.
Salmoneta, a Branlin. *Ray's Letters*, 199.

THE ſamlet is the leſt of the trout kind, is frequent in the *Wye*, in the upper part of the *Severn*, and the rivers that run into it, in the north of *England*, and in *Wales*. It is by ſeveral imagined to be the fry of the ſalmon; but our reaſons for diſſenting from that opinion are theſe:

Firſt, It is well known that the ſalmon fry never

continue in the freſh waters the whole year; but as numerous as they appear on their firſt eſcape from the ſpawn, all vaniſh on the firſt vernal flood that happens, which ſweeps them into the ſea, and leaves ſcarce one behind.

Secondly, The growth of the ſalmon fry is ſo quick and ſo conſiderable, as ſuddenly to exceed the bulk of the largeſt ſamlet: for example, the fry that have quitted the freſh water in the ſpring, not larger than gudgeons, return into it again a foot or more in length.

Thirdly, The ſalmon attain a conſiderable bulk before they begin to breed: the ſamlets, on the contrary, are found male and female*, (diſtinguiſhed by the milt and roe) of their common ſize.

Fourthly, They are found in the freſh waters in all times of the year, and even at ſeaſons when the ſalmon fry have gained a conſiderable ſize. It is well known, that near *Shrewſbury* (where they are called *Samſons*) they are found in ſuch quantities in the month of *September*, that a ſkilful angler, in a coracle, will take with a fly from twelve to ſixteen dozen in a day.

They ſpawn in *November* and *December*, at which time thoſe of the *Severn* puſh up towards the head of that fair river, quitting the leſſer brooks, and return into them again when they have done.

They have a general reſemblance to the trout, therefore muſt be deſcribed comparatively.

* It has been vulgarly imagined, that there were no other than males of this ſpecies.

Firſt,

Firſt, The head is proportionably narrower, and the mouth leſs than that of the trout.

Secondly, Their body is deeper.

Thirdly, They ſeldom exceed ſix or ſeven inches in length.

Fourthly, The pectoral fins have generally but one large black ſpot, tho' ſometimes a ſingle ſmall one attends it; whereas the pectoral fins of the trout are more numerouſly marked.

Fifthly, The ſpurious or fat fin on the back is never tipped with red; nor is the edge of the anal fin white.

Sixthly, The ſpots on the body are fewer, and not ſo bright. It is alſo marked from the back to the ſides with ſix or ſeven large bluiſh bars; but this is not a certain character, as the ſame is ſometimes found in young trouts.

Seventhly, The tail of the ſamlet is much more forked than that of the trout.

VI. The CHARR.

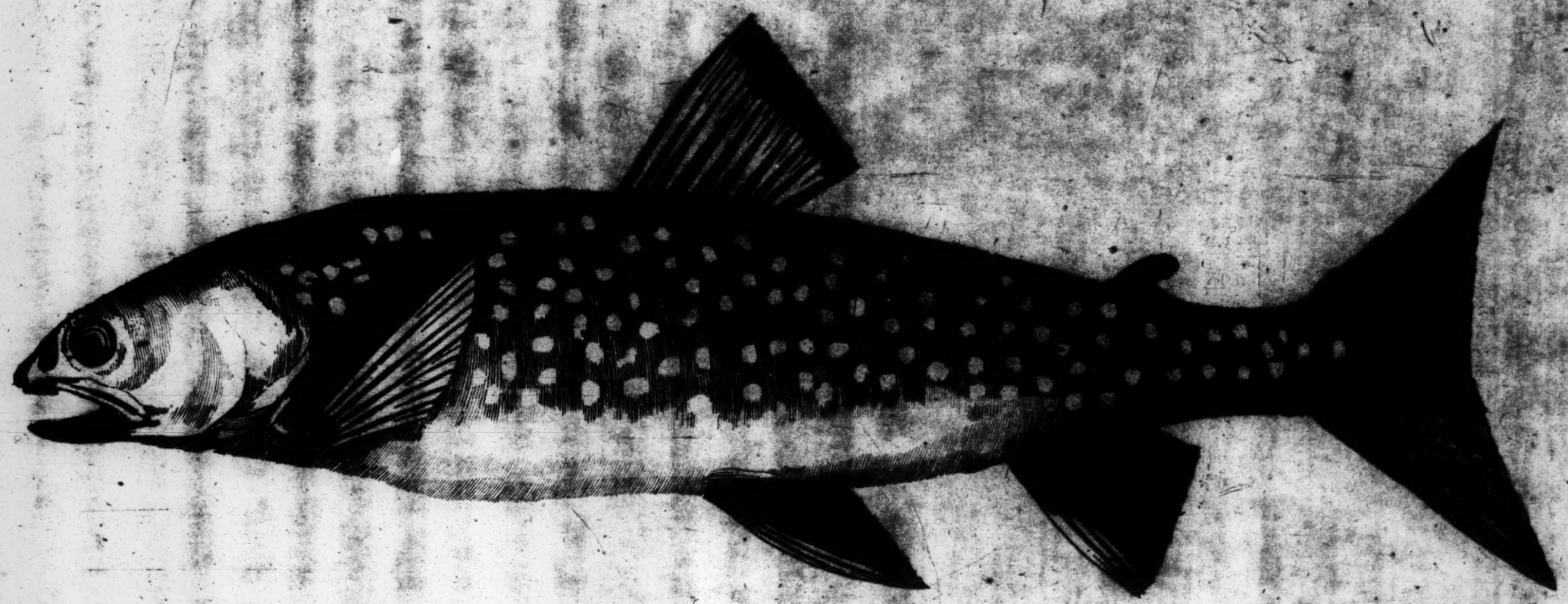
L'Omble, ou Humble. *Belon.* 281.
Umbla ſeu Humble *Belonii. Geſner piſc.* 1005.
Umbla minor. *Geſner piſc.* 1013.
Torgoch *Wallis. Weſtmorlandis* Red Charre *Lacus Winandermere. Wil. Icth.* 196. *Raii ſyn. piſc.* 65.
Salmo vix pedalis, pinnis ventralibus rubris, maxilla inferiore longiore. *Arted. ſyn.* 25.
Salmo Alpinus. *Lin. ſyſt.* 510. *Gronov. Zooph. No.* 372.
Roding, *Lapponibus* Raud. *Faun. ſuec. No.* 124.
Charr-fiſh. *Phil. Tranſ.* 1755. 210.

THE charr is an inhabitant of the lakes of the north, and of thoſe of the mountanous parts of *Europe*. It affects clear and pure waters, and is very rarely known to wander into running ſtreams, except into ſuch whoſe bottom is ſimilar to the neighboring lake.

It is found in vaſt abundance in the cold lakes on the ſummits of the *Lapland Alps*, and is almoſt the only fiſh that is met with in any plenty in thoſe regions; where it would be wonderful how they ſubſiſted, had not Providence ſupplied them with innumerable *larvæ* of the *Gnat* kind*: theſe are food

* A pupil of *Linnæus* remarks in the fourth volume of the *Amæn. Acad. p.* 156, that the ſame inſects which are ſuch a peſt to the rein deer, afford ſuſtenance to the fiſh of the vaſt lakes and rivers of *Lapland*. But at the ſame time that we wonder at *Linnæus*'s inattention to the food of the birds and fiſh of that country, which abound even to a noxious degree, we muſt, in juſtice to that gentleman, acknowlege an overſight of our own in the ſecond volume of the *Britiſh Zoology*, *p.* 522, where we give the *Lapland* waters only one ſpecies of water plant; for on a more careful review of that elaborate performance, the

to



B

to the fiſh, who in their turn are a ſupport to the migratory *Laplanders*

> Whilſt when the ſolar beams ſalute their ſight,
> Bold and ſecure in half a year of light,
> Uninterrupted voyages they take
> To the remoteſt woods, and fartheſt lake *.

In ſuch excurſions thoſe vacant people find a luxurious and ready repaſt in theſe fiſh, which they dreſs and eat without the addition ** of ſauces; for exerciſe and temperance render uſeleſs the inventions of epicuriſm.

There are but few lakes in our iſland that produce this fiſh, and even thoſe not in any abundance. It is found in *Winander Mere* in *Weſtmorland*; in *Llyn Quellyn*, near the foot of *Snowdon*; and before the diſcovery of the copper-mines, in thoſe of *Llyn-berris*, but the mineral ſtreams have entirely deſtroyed the fiſh in the laſt lakes †. Whether the waters of *Ireland* afford the charr, we are uncertain, but imagine not, except it has been overlooked by their writers on the natural hiſtory of that kingdom. In *Scotland* it is found in *Loch Inch*, and other neighboring lakes, and is ſaid to go into the *Spey* to ſpawn.

Flora Lapponica, we diſcover three other ſpecies, viz. *Scirpus*, *No.* 18, *Alopecurus*, *No.* 38, *Ranunculus*, *No.* 234; but thoſe ſo thinly ſcattered over the *Lapland* lakes, as ſtill to vindicate our aſſertion, as to the ſcarceneſs of plants in the waters of alpine countries.

* *Prior*'s *Solomon*. *Book* I.

** *Arted*. *Sp. piſc.* 52.

† They are alſo found in certain lakes in *Merionethſhire*.

The

The largeſt and moſt beautiful we ever received were taken in *Winander Mere*, and were communicated to us by the Rev. Mr. *Farriſh*, of *Carliſle*, with an account of their natural hiſtory. He favored me with five ſpecimens, two under the name of the *Caſe Charr*, male and female; another he called the *Gelt Charr*, i. e. a charr which had not ſpawned the preceding ſeaſon, and on that account is reckoned to be in the greateſt perfection. The two others were inſcribed, the *Red Charr*, *the Silver or Gilt Charr*, the *Carpio Lacus* BENACI, *Raii ſyn. piſc.* 66, which laſt are in *Weſtmorland* diſtinguiſhed by the epithet *red*, by reaſon of the fleſh aſſuming a higher color than the other when dreſſed.

Varieties. On the cloſeſt examination, we could not diſcover any ſpecific differences in theſe ſpecimens, therefore muſt deſcribe them as the ſame fiſh, ſubject only to a ſlight variation in their form, hereafter to be noted. But there is in another reſpect an eſſential difference, we mean in their œconomy, which is in all beings invariable; the particulars we ſhall deliver in the very words of our obliging informant.

Spawning of the caſe charr. The *Umbla minor*, or caſe charr, ſpawns about *Michaelmas*, and chiefly in the river *Brathy*, which uniting with another called the *Rowthay*, about a quarter of a mile above the lake, they both fall into it together. The *Brathy* has a black rocky bottom; the bottom of the *Rowthay* is a bright ſand, and into this the charr are never obſerved to enter. Some of them however ſpawn in the lake, but always in ſuch parts of it which are ſtony, and reſemble the channel

channel of the *Brathy*. They are ſuppoſed to be in the higheſt perfection about *May*, and continue ſo all the ſummer, yet are rarely caught after *April*. When they are ſpawning in the river they will take a bait, but at no other time, being commonly taken, as well as the other ſpecies, in what they call *breaſt nets*, which are in length about twenty-four fathoms, and about five, where broadeſt.

Gilt charr.

The ſeaſon which the other ſpecies ſpawns in is from the beginning of *January* to the end of *March*. They are never known to aſcend the rivers, but always in thoſe parts of the lake which are ſpringy, where the bottom is ſmooth and ſandy, and the water warmeſt. The fiſhermen judge of this warmth, by obſerving that the water ſeldom freezes in the places where they ſpawn, except in intenſe froſts, and then the ice is thinner than in other parts of the lake. They are taken in greateſt plenty from the end of *September* to the end of *November*: at other times they are hardly to be met with. This ſpecies is much more eſteemed for the table than the other, and is very delicate when potted.

We muſt obſerve, that this account of the ſpawning ſeaſon of the *Weſtmorland* charrs, agrees very nearly with that of thoſe of *Wales*, the laſt appearing about a month later, keep moving from ſide to ſide of the pool, and then retire into the deep water, where they are ſometimes but rarely taken.

This remarkable circumſtance of the different ſeaſon of ſpawning in fiſh, apparently the ſame (for the red charr of *Winander*, is certainly not the

Carpio

Carpio Lacus BENACI*) puzzles us greatly, and makes us wiſh that the curious, who border on that lake, would pay farther attention to the natural hiſtory of theſe fiſh, and favor us with ſome further lights on the ſubject.

We ſhall now deſcribe the varieties by the names aſcribed to them in the north.

Red charr. The length of the red charr to the diviſion in its tail, was twelve inches; its biggeſt circumference almoſt ſeven. The firſt dorſal fin five inches and three quarters from the tip of its noſe, and conſiſted of twelve branched rays; the firſt of which was ſhort, the fifth the longeſt: the fat fin was very ſmall.

Each of the five fiſh had double noſtrils, and ſmall teeth in the jaws, roof of the mouth, and on the tongue.

The head, back, dorſal fin, and tail of each, was of a duſky blue; the ſides rather paler, marked with numbers of bright red ſpots: the bellies of the *Red Charr* were of a full and rich red; thoſe of the *Caſe Charr* rather paler; from this particular the *Welch* call theſe fiſh *Torgoch*, or red belly.

The firſt rays of the anal and ventral fins of each, were of a pure white; the reſt of each fin on the lower part of the body, tinged with red.

The lateral line ſtrait, dividing the fiſh in two equal parts, or nearly ſo.

The jaws in the *Caſe Charr* are perfectly even; on the contrary, thoſe of the *Red Charr* were unequal,

* A fiſh well deſcribed by *Salvianus*, *p.* 99, which bears no kind of reſemblance to our fiſh, except the generical one.

the upper jaw being the broadeſt, and the teeth hung over the lower, as might be perceived on paſſing the finger over them.

The branchioſtegous rays were, on different ſides of the ſame fiſh, unequal in number, viz. 12,--11, 11,--10, 10--9, except in one, where they were 11,--11.

The *Gelt*, or *Barren Charr*, was rather more ſlender than the others, as being without ſpawn. The back of a gloſſy duſky blue: the ſides ſilvery, mixed with blue, ſpotted with pale red: the ſides of the belly were of a pale red, the bottom white. Gelt charr.

The tails of each bifurcated.

The charrs we have ſeen, brought from the *Snowdon* lakes, were rather ſmaller than thoſe of *Weſtmorland:* their colors paler. The ſuppoſed males very much reſemble the *Gelt Charr*; but that is not a certain diſtinction of ſex, for the Rev. Mr. *Farrington* *, has told me that the fiſhermen do not make that diſtinction.

* Who favored the Royal Society with a paper on the *Welsh* charr. *Vide Phil. Tranſ.* 1755.

VII. The

VII. The GRAYLING.

Θυμαλλος. *Ælian. de an. lib.* xiv. *c.* 22. Umbra *Auſonii Moſella.* 90.
Thymalus, Thymus. *Salvian.* 81. *Belon.* 276.
Thymus, Umbra fluviatilis. *Rondel. fluv.* 187, 172. *Geſner piſc.* 132.
A Grayling, or Umber. *Wil. Icth.* 187. *Raii ſyn. piſc.* 62, Coregonus maxilla ſuperiore longiore, pinna dorſi officulorum viginti trium. *Arted. ſynon.* 20.
Salmo Thymallus. *Lin. ſyſt.* 512. *Gronov. Zooph. No.* 375. Aſch. *Kram.* 390.

THE grayling haunts clear and rapid ſtreams, and particularly ſuch that flow thro' mountanous countries. It is found in the rivers of *Derbyſhire*; in ſome of thoſe of the north; in the *Tame* near *Ludlow*; and in the *Lug*, and other ſtreams near *Leominſter*: it is alſo very common in *Lapland*; the inhabitants make uſe of the guts of this fiſh inſtead of rennet, to make the cheeſe which they get from the milk of the rein deer *.

It is a voracious fiſh, riſes freely to the fly, and will very eagerly take a bait. It is a very ſwift ſwimmer, and diſappears like the tranſient paſſage of a ſhadow, from whence we believe is derived the name of *Umbra*.

Effugienſque oculos celeri levis UMBRA *natatu* **.

The *Umbra* ſwift eſcapes the quickeſt eye.

Thymalus and *Thymus*, are names beſtowed on it on account of the imaginary ſcent, compared by ſome

* *Flora Lap.* 109. ** *Æmæn. Acad.* iv. 159.

to

to that of thyme; but we never could perceive any particular ſmell.

It is a fiſh of an elegant form; leſs deep than that of a trout: the largeſt we ever heard of was taken near *Ludlow*, which was above half a yard long, and weighed four pounds ſix ounces, but this was a very rare inſtance. Deſcr.

The irides are ſilvery, tinged with yellow: the teeth very minute, ſeated in the jaws and the roof of the mouth, but none on the tongue: the head is duſky: the covers of the gills of a gloſſy green: the back and ſides of a fine ſilvery grey, but when the fiſh is juſt taken, varied ſlightly with blue and gold: the ſide-line is ſtrait.

The ſcales large, and the lower edges duſky, forming ſtrait rows from head to tail.

The firſt dorſal fin has twenty-one rays; the three or four firſt are the ſhorteſt, the others almoſt of equal lengths; this fin is ſpotted, all the others are plain.

The tail is much forked.

VIII. The SMELT.

Epelan de mer. *Belon.* 282.
Eperlanus. *Rondel. fluviat.* 196. *Geſner piſc.* 362.
Spirincus et Stincus. *Geſner Paralip.* 29.
A Spyrling a Sprote. *Turner epiſt. ad. Geſn.*
Stindt, et Stinckfiſch. *Schonevelde.* 70.
A Smelt. *Wil Icth.* 202. *Raii ſyn. piſc.* 66.
Oſmerus radiis pinnæ ani ſeptendecim. *Arted. ſynon.* 21.
Salmo eperlanus. S. capite diaphano, radiis pinnæ ani ſeptendecim. *Lin. ſyſt.* 511. *Gronov. Zooph. No.*
Nors, Slom. *Faun ſuec. No.* 350.

THE ſmelt inhabits the ſeas of the northern parts of *Europe*, and we believe never is found as far ſouth as the *Mediterranean:* the *Seine* is one of the *French* rivers which receive it, but whether it is found ſouth of that, we have not at preſent authority to ſay. If we can depend on the obſervations of navigators, who generally have too much to think of to attend to the *minutiæ* of natural hiſtory, theſe fiſh are taken in the ſtraits of *Magellan* *, and of a moſt ſurpriſing ſize, ſome meaſuring twenty inches in length, and eight in circumference.

They inhabit the ſeas that waſh theſe iſlands the whole year, and never go very remote from ſhore, except when they aſcend the rivers. It is remarked in certain rivers that they appear a long time before they ſpawn, being taken in great abundance in *November*, *December*, and *January*, in the *Thames* and *Dee*, but in others not till *February*, and in *March*

* *Narborough's Voy.* 123.

and

and *April* they ſpawn; after which* they all return to the ſalt water, and are not ſeen in the rivers till the next ſeaſon. It has been obſerved, that they never come into the *Merſey* as long as there is any ſnow water in the river.

Theſe fiſh vary greatly in ſize, but the largeſt we ever heard of was thirteen inches long, and weighed half a pound.

They have a very particular ſcent, from whence is derived one of their *Engliſh* names *Smelt*, i. e. ſmell it. That of *Sparling*, which is uſed in *Wales*, and the north of *England*, is taken from the *French Eperlan*. There is a wonderful diſagreement in the opinion of people in reſpect to the ſcent of this fiſh; ſome aſſert it flavors of the violet; the *Germans*, for a very different reaſon, diſtinguiſh it by the elegant title of *Stinckfiſch***.

It is a fiſh of a very beautiful form and color: the head is tranſparent, and the ſkin in general ſo thin, that with a good microſcope the blood may be obſerved to circulate.

The irides are ſilvery: the pupil of a full black: the under jaw is the longeſt: in the front of the upper jaw are four large teeth; thoſe in the ſides of both are ſmall; in the roof of the mouth are two Deſcr.

* In the river *Conway*, near *Llanrwſt*, and in the *Merſey* they never continue above three or four weeks.

** And not without reaſon, if we may depend on *Linnæus*, who ſays there are in the *Baltic* two varieties, the one, which is called *Nors*, *fœtidiſſimus*, *ſtercoris inſtar*, which in the early ſpring, when the peaſants come to buy it, fills all the ſtreets of *Upſal* with the ſmell. He adds, that at this ſeaſon agues reign there. *Faun. ſuec. p.* 125.

rows of teeth; on the tongue two others of large teeth.

The firſt dorſal fin has eleven rays; the pectoral fins the ſame number; the ventral eight; the anal fourteen.

The ſcales are ſmall, and readily drop off: the tail conſiſts of nineteen rays, and is forked.

The color of the back is whitiſh, with a caſt of green, beneath which it is varied with blue, and then ſucceeds a beautiful gloſs of a ſilvery hue.

South-ampton ſmelt.

Beſides this ſpecies is another, which was communicated to us by the Hon. *Daines Barrington*, who deſcribes it in theſe words:

The *Southampton* ſmelt agrees with the common kind in having two back fins, but both of them are radiated; the firſt with eight radii, the ſecond with twelve; the belly fins have only five or ſix radii: the upper jaw is longer than the lower, and has a few teeth, whereas the lower has none: in color, tranſparency of the back and head, ſilver ſtripes on the ſides, forked tail, &c. it agrees nearly with the former, but has nothing of the violet ſmell or taſte. It ſwarms in that ſea, and is the common bait for whiting, mackrell, flat-fiſh, &c. It is eaten fried, is tender and ſweet, and without any ſmall bones, but muſt be gutted before it is dreſſed. It grows to three or four inches in length, but is commonly much leſs.

IX. The GWINIAD.

Le Lavaret. *Belon.* 278.
Lavaretus; Piſcis *Lemani* lacus *Bezola* vulgo nuncupatus. Alius Piſcis proprius *Lemani* lacus. *Rondel. fluviat.* 162, 163, 164. *Geſner piſc.* 29, 30, 31.
Albula nobilis, Snepel, Helte? *Schonevelde* 12.
Vandeſius et Gevandeſius. *Sib. Scot.* 26.
Guiniad *Wallis* piſcis lacus *Balenſis, Ferræ* (uc puto) idem. *Wil Icth.* 183. *Raii ſyn. piſc.* 61.
Lavaretus *Allobrogum*, Schelley *Cumberlandis. Wil. Icth.* 183. *Raii ſyn. piſc.* 61.
Albula cærulea. *Scheuchzer it. Alp.* ii. 481.
Coregonus maxilla ſuperiore longiore plana, pinna dorſi oſſiculorum 14. *Arted. ſynon.* 19.
Salmo Lavaretus. *Lin. ſyſt.* 512.
Sijk, Stor-ſijk. *Faun. ſuec. Ne.* 352.
Gwiniad. *Phil. Tranſ.* 1767. 211.
Adelfiſch, Gangfiſch, Weiſsfiſch, Weiſſer Blauling, Schnapel. *Wulff Boruſs*, 37.
Reinankl. *Kram.* 389.

THIS fiſh is an inhabitant of ſeveral of the lakes of the *Alpine* parts of *Europe*. It is found in thoſe of *Suitzerland*, *Savoy*, and *Italy*; of *Norway*, *Sueden*, *Lapland**, and *Scotland*; in thoſe of *Ireland*, and of *Cumberland*; and in *Wales*, in that of *Llyntegid*, near *Bala*, in *Merionethſhire*.

* *Schæffer*, in his Hiſtory of *Lapland*, p. 140. ſays, that theſe fiſh are caught there of the weight of ten or twelve pounds. We wiſh *Linnæus* had executed his intention of favoring the world with his *Lacheſis Lapponica*, in which he promiſed a complete hiſtory of that country. I once reminded him of it, and it is with true regret, that I give his anſwer :——*Nunc nimis ſeró inciperem,*

Me quoque debilitat ſeries immenſa laborum,
Ante meum tempus cogor et eſſe ſenem :
Firma ſit illa licet ſolvetur in æquore navis,
Quæ nunquam liquidis ſicca carebit aquis.

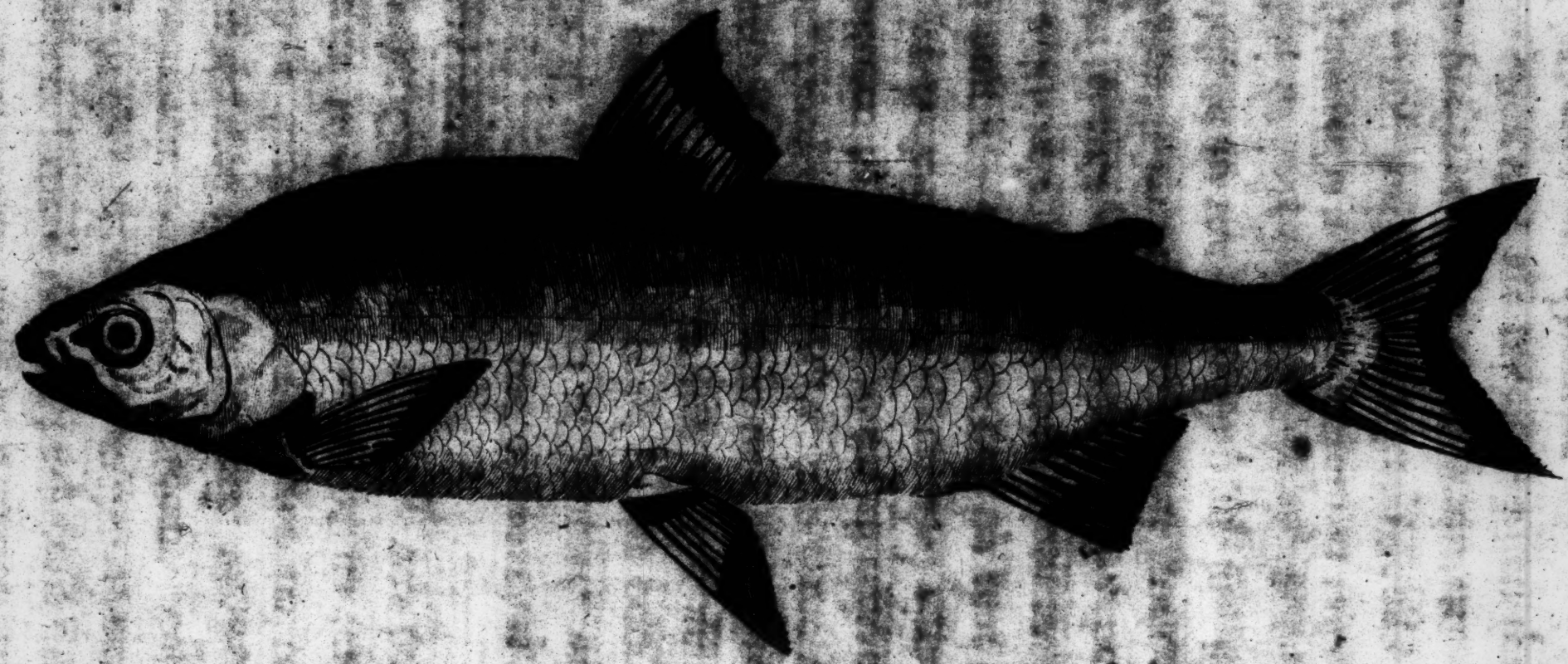
It is the ſame with the *Ferra* of the lake of *Geneva*, the *Schelly* *, of *Hulſe-water*, the *Pollen* of *Lough Neagh*, and the *Vangis* and *Juvangis* of *Loch Mabon*. The *Scotch* have a tradition that it was firſt introduced there by the beauteous queen, their unhappy *Mary Stuart*; and as in her time the *Scotch* court was much frenchified, it ſeems likely that the name was derived from the *French*, *vendoiſe*, a dace; to which a ſlight obſerver might be tempted to compare it from the whiteneſs of its ſcales. The *Britiſh* name *Gwiniad*, or whiting, was beſtowed on it for the ſame reaſon.

It is a gregarious fiſh, and approaches the ſhores in vaſt ſhoals in ſpring and in ſummer, which prove in many places a bleſſed relief to the poor of inland countries, in the ſame degree as the annual return of the herring is to thoſe who inhabit the coaſts. The Rev. Mr. *Farriſh*, of *Carliſle*, wrote me word, that he was aſſured by a *Hulſe-water* fiſherman, that laſt ſummer he took between ſeven and eight thouſand at one draught. I muſt not paſs by that gentleman without acknowleging my obligations to him for an account of the *Charrs* and the *Schelly*; he being one of the valuable embelliſhers of this work, for whom I am indebted to the friendſhip of his late worthy prelate.

The *Gwiniad* is a fiſh of an inſipid taſte, and muſt be eaten ſoon, for it will not keep long; thoſe that chooſe to preſerve them do it with ſalt. They die very ſoon after they are taken. Their ſpawning ſeaſon in *Llyntegid* is in *December*.

* The inhabitants of *Cumberland* give this name alſo to the chub, from its being a ſcaly fiſh.

It



G Wilkinson del

P Mazell Sculp



It has long ago been obſerved in *Cambden* *, that theſe fiſh never wander into the *Dee*, nor the ſalmon never ventures into the lake: this muſt be allowed to be generally the caſe; but by accident the firſt have been known to ſtray as far as *Llandrillo*, ſix miles down the river, and a ſalmon has now and then been found treſpaſſing in the lake **.

The largeſt *Gwiniad* we ever heard of weighed between three and four pounds: we have a *Ferra* we brought with us out of *Suitzerland*, that is fifteen inches long; but theſe are uncommon ſizes: the fiſh which we deſcribe was eleven inches long, its greateſt depth three.

The head ſmall, ſmooth, and of a duſky hue: the eyes very large: the pupil of a deep blue: the noſe blunt at the end: the jaws of equal length: the mouth ſmall and toothleſs: the branchioſtegous rays nine: the covers of the gills ſilvery, powdered with black.

The back is a little arched, and ſlightly carinated: the color, as far as the lateral line, gloſſed with deep blue and purple, but towards the lines aſſumes a ſilvery caſt, tinged with gold, beneath which thoſe colors entirely prevale.

The ſide line is quite ſtrait, and conſiſts of a ſeries of diſtinct ſpots of a duſky hue: the belly is a little prominent, and quite flat on the bottom.

The firſt dorſal fin is placed almoſt in the middle, and conſiſts of fourteen branched rays; the ſecond is thin, tranſparent, and not diſtant from the tail.

* *Vol.* ii. 790.

** *Hon. Mr.* D. Barrington's *Letter to Dr.* Watſon. Phil. Tranſ. 1767.

The

The pectoral fins had eighteen rays, the firſt the longeſt, the others gradually ſhortening; the ventral fins were compoſed of twelve, and the anal of fifteen, all branched at their ends; the ventral fins in ſome are of a fine ſky blue, in others as if powdered with blue ſpecks; the ends of the other lower fins are tinged with the ſame color.

The tail is very much forked: the ſcales large, and adhere cloſe to the body.

Genus XXXV. Upper jaw ſhorter than the lower. Body long, ſlender, compreſſed ſideways. One dorſal fin placed near the tail. PIKE.

I. The PIKE.

Lucius. *Auſonii Moſella*, 122.
Luccio. *Salvian.* 94.
Le Brochet. *Belon.* 292. *Itin.* 104.
Lucius. *Rondel. fluviat.* 188. *Geſner piſc.* 500.
Heket, Hecht. *Schonevelde.* 44.
Pike, or Pickerel. *Wil. Icth.* 236. *Raii ſyn. piſc.* 112.
Eſox roſtro plagioplateo. *Arted. ſynon.* 26.
Eſox Lucius. *Lin. ſyſt.* 516. *Gronov. Zooph. No.* 361.
Gjadda. *Faun. ſuec. No.* 355.
Hecht. *Kram.* 388.

THE pike is common in moſt of the lakes of *Europe*, but the largeſt are thoſe taken in *Lapland*, which, according to *Schæffer*, are ſometimes eight feet long. They are taken there in great abundance, dried, and exported for ſale. The largeſt fiſh of this kind which we ever heard of in *England*, weighed thirty-five pounds.

All

All writers who treat of this ſpecies bring inſtances of its vaſt voraciouſneſs. We have known one that was choaked by attempting to ſwallow one of its own ſpecies that proved too large a morſel. It does not confine itſelf to feed on fiſh and frogs; it will devour the water rat, and draw down the young ducks as they are ſwimming about. In a manuſcript note which we found, p. 244, of our copy of *Plott*'s Hiſtory of *Staffordſhire*, is the following extraordinary fact: "At Lord *Gower*'s ca-
"nal at *Trentham*, a pike ſeized the head of a ſwan
"as ſhe was feeding under water, and gorged ſo
"much of it as killed them both. The ſervants
"perceiving the ſwan with its head under water for
"a longer time than uſual, took the boat, and found
"both ſwan and pike dead*."

But there are inſtances of its fierceneſs ſtill more ſurprizing, and which indeed border a little on the marvellous. *Geſner* ** relates, that a famiſhed pike in the *Rhone* ſeized on the lips of a mule that was brought to water, and that the beaſt drew the fiſh out before it could diſengage itſelf. That people have been bit by theſe voracious creatures while they were waſhing their legs, and that they will even contend with the otter for its prey, and endeavour to force it out of its mouth†.

Small fiſh ſhew the ſame uneaſineſs and deteſtation at the preſence of this tyrant, as the little

* This note we afterwards diſcovered was wrote by Mr. *Plott*, of *Oxford*, who aſſured me he inſerted it on good authority.

** *Geſner piſc.* 503. † *Walton.* 157.

birds

birds do at the ſight of the hawk or owl. When the pike lies dormant near the ſurface (as is frequently the caſe) the leſſer fiſh are often obſerved to ſwim around it in vaſt numbers, and in great anxiety. Pike are often haltered in a nooſe, and taken while they lie thus aſleep, as they are often found in the ditches near the *Thames* in the month of *May*.

In the ſhallow water of the *Lincolnſhire* fens they are frequently taken in a manner peculiar, we believe, to that county, and the iſle of *Ceylon* *. The fiſhermen makes uſe of what is called a crown-net, which is no more than a hemiſpherical baſket, open at top and bottom. He ſtands at the end of one of the little fen-boats, and frequently puts his baſket down to the bottom of the water, then poking a ſtick into it, diſcovers whether he has any booty by the ſtriking of the fiſh; and vaſt numbers of pike are taken in this manner.

Longevity. The longevity of this fiſh is very remarkable, if we may credit the accounts given of it. *Rzaczynſki* ** tells us of one that was ninety years old; but *Geſner* † relates, that in the year 1497, a pike was taken near *Hailbrun*, in *Suabia*, with a brazen ring affixed to it, on which were thoſe words in *Greek* characters: *I am the fiſh which was firſt of all put into this lake by the hands of the governor of the univerſe*, FREDERICK *the Second, the 5th of* October, 1230:" ſo that the former muſt have been an infant to this *Methuſalem* of a fiſh.

* *Knox*'s *Hiſt. Ceylon*, 28.
** *Hiſt. Nat. Poloniæ*, 152.
† *Icones piſcium*, 316, where a print of the ring is given.

Pikes

Pikes ſpawn in *March* or *April*, according to the coldneſs or warmth of the weather. When they are in high ſeaſon their colors are very fine, being green, ſpotted with bright yellow; and the gills are of a moſt vivid and full red. When out of ſeaſon, the green changes to grey, and the yellow ſpots turn pale.

The head is very flat; the upper jaw broad, and is ſhorter than the lower: the under jaw turns up a little at the end, and is marked with minute punctures. Deſcr.

The teeth are very ſharp, diſpoſed only in the front of the upper jaw, but in both ſides of the lower, in the roof of the mouth, and often the tongue. The ſlit of the mouth, or the gape, is very wide; the eyes ſmall.

The dorſal fin is placed very low on the back, and conſiſts of twenty-one rays; the pectoral of fifteen; the ventral of eleven; the anal of eighteen.

The tail is bifurcated.

II. The SEA PIKE.

Βελόνη. *Ariſt. Hiſt. an.* ii. *c.* 15. &c.
Βελόνη, Ραφις? *Athenæus. lib.* vii. 319.
Acus, ſive Belone *Plinii lib.* ix. *c.* 51.
Acuchia. *Salvian.* 68.
L'Aguille, ou Orphie. *Belon.* 161.
Acus prima ſpecies. *Rondel.* 227. *Geſner piſc.* 9.
Horn-fiſck. *Schonevelde.* 11.
Horn-fiſh, or Gar-fiſh. *Wil. Icth.* 231. *Raii ſyn. piſc.* 109.
Eſox roſtro cuſpidato gracili ſubtereti, et ſpithamali, *Arted. ſynon.* 27.
Eſox Belone. E. roſtro utraque maxilla dentata. *Lin. ſyſt.* 517. *Gronov. Zooph. No.* 362.
Nabbgjadda, Horngiall. *Faun. ſuec. No.* 156.
See-naadel, Sack-nadel. *Wulff Boruſs. No.* 70.

THIS fiſh which is known in many places, is known by the name of the *Sea Needle*. It comes in ſhoals on our coaſts in the beginning of ſummer, and precedes the mackrel: it has a reſemblance to it in taſte, but the light green, which ſtains the back bone of this fiſh when boiled, gives many people a diſguſt to it.

Mr. *Ray* tells us, that when he was in *Cornwall*, the fiſhermen gave him the names of two ſpecies of this fiſh, one they called *Girrocks*, the other *Skippers*; theſe we may ſuppoſe to be the common kind, the other (according to Mr. *Jago*'s conjecture) is probably the ſame with the *Saurus* of *Rondeletius*, p. 232, which both thoſe icthyologiſts agree has a ſhorter noſe than the common ſpecies. We have no other deſcription of this fiſh than what is left us by *Rondeletius*, who ſays, that it is ſhorter and thicker than the other; that the noſe is ſhorter and turns up; that

Saurus.

the edges of the jaws are ſerrated; and that between the anal fin and the tail it has ſeveral ſpurious fins like the mackrel. We do not venture to make a diſtinct article of this fiſh, becauſe Mr. *Jago* has not pointed out the ſpecific difference; but we thought it neceſſary to give this brief deſcription of it from *Rondeletius*, to ſupply that defect in caſe the *Saurus* ſhould prove a *Britiſh* fiſh.

The common ſea pike, or ſea needle, ſometimes grows to the length of three feet, or more. Deſcr.

The jaws are very long, ſlender, and ſharp pointed; the under extends much farther than the upper, and the edges of both are armed with numbers of ſhort ſlender teeth: the inſide of the mouth is purple: the tongue ſmall: the eyes large: the irides ſilvery: the noſtrils wide and round.

The body is ſlender: the belly quite flat, bounded on both ſides by a rough line.

The pectoral fins conſiſt of twelve rays; the ventral fins ſmall, and placed very remote from the head, conſiſts of ſix rays, the firſt ſpiny.

The dorſal fin lies on the very lower part of the back, conſiſts of eighteen rays; the firſt are high, the others lower as they approach the tail; the anal fin is of the ſame form, and placed oppoſite the other: the tail is forked.

The colors are extremely beautiful when the fiſh is in the water: the back of a fine green, beneath that appears a rich changeable blue and purple: the ſides and belly are of a fine ſilvery hue.

Genus

Genus XXXVI. Teeth in the jaws and tongue.
Eight branchioſtegous rays.
Vent near the tail.
The ventral fins compoſed of many rays. ARGENTINE.

I. The ARGENTINE.

Sphyræna parva, ſive ſphyræna ſecunda ſpecies. *Rondel.* 227. *Geſner piſc.* 883.
Piſciculus *Romæ*, Argentina dictus. *Wil. Ich.* 229. *Rali ſyn. piſc.* 108.
Argentina. *Arted. ſynon.* 17.
Argentina *Sphyræna*. *Lin. ſyſt.* 518. *Gronov. Zooph. No.* 349.

THIS ſpecies was communicated to us by Mr. *Brunnich*, who ſaw it taken off the iſle of *Sheppy*, and is, according to Doctor *Gronovius*, common in the mouth of the *Schelde* during autumn.

It is a ſmall fiſh of a ſlender form: the noſe is ſharp pointed: the teeth very minute: the eyes large.

On the back is one ſmall fin, conſiſting of ten ſoft rays; the pectoral of about fourteen; the ventral of eleven; the anal of nine: the tail is forked.

The back is green: the ſides beneath the lateral line ſilvery.

Mr. *Willoughby*, from whom we borrow this deſcription, ſays, that the outſide of the air bladder of this fiſh conſiſts of a foliaceous ſilvery ſkin, which was made uſe of in the manufacture of artificial pearl.

Genus

Genus XXXVII. The upper jaw a little flat.
Six branchioſtegous rays.
A ſilvery ſtripe along the ſide.

ATHERINE.

I. The ATHERINE.

Epſetus? *Belon.* 209.

Εψητος, Atherina. *Rondel.* 215, 216. *Boſſuet Epig.* 66. 67. *Geſner piſc.* 71, 72.

Piſciculus *Anguella Venetiis* dictus; forte Hepſetus *Rondeletii*, vel *Atherina* ejuſdem. *Wil. Icth.* 209. *Raii ſyn. piſc.* 79.

Atherina. *Arted. ſynon. App.* 116.

Atherina Hepſetus. A. pinna ani radiis fere duodecim. *Lin. ſyſt.* 519. *Gronov. Zooph. No.* 399.

IT is alſo to the ſame gentleman that we are indebted for our knowledge of this being a *Britiſh* fiſh, it having been ſeen by him at the ſame place with the former.

Mr. *Willoughby* deſcribes it as not exceeding three inches and a quarter in length: its form is ſlender: the body covered with ſcales, and entirely pellucid, except where the back bone and inteſtines lie: the back is ſpotted with black: the ſides are ſilvery: when the ſcales are taken off it appears that every four ſpots form a rhombic figure.

On the back are two fins; the firſt conſiſts of ſeven, the ſecond of eleven rays; the pectoral of fourteen; the ventral of ſix; the anal of fourteen.

The tail, according to Doctor *Gronovius*, bifurcated*.

* *Muſ. Icthyol.* I. *No.* 66.

Genus

Genus XXXVIII. Body and covers of the gills clothed with large scales.
Six incurvated branchiostegous rays.
Teeth on the tongue and in the palate only. MULLET.

I. The MULLET.

Κεφαλος, Κεσρέυς. *Arist. Hist. an. lib.* v. *c.* 11, &c.
Κεσρέυς. *Oppian Halieut.* iii. 98. *Athenæus lib.* vii. 306.
Mugil *Ovid Halieut.* 37. *Plinii lib.* ix. *c.* 8. 17.
Cephalo. *Salvian.* 75.
Le Mulet. *Belon.* 205.
Cephalus. *Rondel.* 260. *Gesner pisc.* 549.
Mullet. *Wil. Icth.* 274. *Raii syn. pisc.* 84.
Mugil. *Arted. synon.* 52.
Mugil cephalus. M. pinna dorsali anteriore quinque radiate. *Lin. syst.* 520. *Gronov. Zooph. No.* 397.

THE mullet is justly ranked by *Aristotle* among the *Pisces Littorales*, or those that prefer the shores to the full sea: they are found in great plenty on several of the sandy coasts of our island, and haunt in particular those small bays that have influxes of fresh water. They come in great shoals, and keep rooting like hogs in the sand or mud, leaving their traces in form of large round holes. They are very cunning, and when surrounded with a net, the whole shoal frequently escapes by leaping over it, for when one takes the lead, the others are sure to follow: this circumstance is taken notice of by *Oppian*; whether the latter part of his observation is true, is what we are uncertain.

Κεσρευς

Κεϛρευς μεν πλεκτῆσιν ἐν ἀγκοίνησι λίνοιο,
Ελκόμενος δόλον ὅτι περιδρομον ἠγνοίησεν.
Υ῎ψι δ᾽ ἀναθρώσκει λελιημένος ὕδατος ἄκρου,
Ορθὸς ἄνω σπεύδων ὅσσον σθένος ἅλματι κεφῳ
Ορμῆσαι· βελῆς δὲ σαόφρονος οὐκ ἐμάτησε·
Πολλάκι γὰρ ῥιπῆσι καὶ ὕϛατα πείσματα φελλῶν
Ρηϊδίως ὑπεράλτο, καὶ ἐξήλυξε μόροιο.
Εἰ δ᾽ ὅγ᾽ ἀνορμηθεὶς πρῶτον ϛόλον, αὖτις ὀλισθῇ
Ες βρόχον, οὐκ ἔτ᾽ ἔπειτα βιάζεται, ἀὸ᾽ ἀνορύει,
Αχνύμενος· πείρῃ δὲ μαθὼν ἀποπαύεται ὁρμῆς.

The *Mullet* *, when encircling ſeines incloſe,
The fatal threads and treach'rous boſom knows.
Inſtant he rallies all his vig'rous powers,
And faithful aid of every nerve implores;
O'er battlements of cork up-darting flies,
And finds from air th' eſcape that ſea denies.
But ſhould the firſt attempt his hopes deceive,
And fatal ſpace th'impriſon'd fall receive,
Exhauſted ſtrength no ſecond leap ſupplies;
Self-doom'd to death the proſtrate victim lies,
Reſign'd with painful expectation waits,
'Till thinner elements compleat his fates. JONES.

Oppian had good opportunity of examining theſe fiſh, for they ſwarm during ſome ſeaſons on the coaſts of the *Mediterranean*. Near *Martegues*, in the ſouth of *France*, abundance of mullets are taken in weres made of reeds placed in the ſhallows. Of the milts of the males, which are there called *Alletants*, and of the roes of the females, which are called *Botar*, is made *Botargo*. The materials are taken out entire, covered with ſalt for four or five hours, then preſſed a little between two boards or ſtones, waſhed, and at laſt dried in the ſun for thirteen or fourteen days **.

* Mr. *Jones*, by miſtake, tranſlates it, the *Barbel*.

** Mr. *Willoughby*'s notes during his travels. *Vide Harris's Col. Voy.* II. 721.

This fiſh was ſometimes made the inſtrument of a horrible puniſhment for unfortunate gallants. It was in uſe both at *Athens** and at *Rome*; but we doubt much whether it was a legal one: for we rather ſuſpect it was inflicted inſtantaneouſly by the injured and enraged huſband, at a ſeaſon when

Furor arma miniſtrat.

Juvenal ſeems to ſpeak of it in that light as well as *Horace*: the former, relating the revenge taken by the exaſperated ſpouſe, deſcribes it as very various;

Necat hic ferro, ſecat ille cruentis
Verberibus, quoſdam mœchos et MUGILIS *intrat***.

The paſſage in *Horace* ſeems not to have been attended to by the critics; but when he mentions the diſtreſſes that the invader of another's bed underwent, he moſt certainly alludes to this penalty:

Diſcinctâ tunicâ fugiendum eſt, ac pede nudo;
Ne nummi pereant, aut PYGA, *aut denique fama*†.

The mullet is an excellent fiſh for the table, but at preſent not a faſhionable one.

Deſcr. The head is almoſt ſquare, and is flat on the top: the noſe blunt: lips thick. It has no teeth, only in the upper lip is a ſmall roughneſs: between the eyes and the mouth is a hard callus.

* *Legibus* Athenienſium *adulteri* εν ἔργῳ *deprehenſi pœna fuit* ῥαφανίδωσις. *Raphani loco utebantur nonnunquam mugile piſce, interdum ſcorpione.* Cauſauboni *animadvers: in* Athenæum. *lib.* I. *c.* 5. *tom.* ii. *edit.* Lugd. 1621.

** *Satyr.* x. 316.

† *Satyr.* ii. *lib.* I. 132.

The

The pupil of the eye is black, encircled with a ſmall ſilvery line: the upper part of the iris is hazel; the lower ſilvery.

The form of the body is pretty thick, but the back not greatly elevated. The ſcales are large and deciduous.

The firſt dorſal fin is placed near the middle of the back, and conſiſts of four ſtrong ſpines; the ſecond of nine ſoft branching rays; the pectoral has ſixteen, the ventral ſix; the firſt a ſtrong ſpine, the others ſoft.

The tail is much forked.

The color of the back is duſky, varied with blue and green: the ſides ſilvery, marked with broad duſky parallel lines, reaching from head to tail: the belly is ſilvery.

Genus XXXIX. Head covered with ſcales. Pectoral fins almoſt as long as the body.

FLYING FISH.

I. The FLYING FISH.

Hirundo *Plinii lib.* ix. *c.* 26.
* Εξώκοιτος και Ἀδωνις? *Athenæi lib.* viii. 332. *Oppian Halieut.* I. 157. Χελιδων? *Oppian* ii. 459.
Rondine. *Salvian.* 186.
Hirondelle de mer. *Belon.* 189.
Mugil alatus. *Rondel.* 267. *Geſner piſc.* 553. *Wil. Icth.* 233.
Exocætus. *Arted. Synon.* 18
Exocætus volitans. E. abdomine utrinque carinato. *Lin. ſyſt.* 520. *Amæn. Acad.* I. 603. *Gronov. Zooph. No.* 359.

WE can produce but a ſingle inſtance of this ſpecies** being taken on the *Britiſh* coaſts. In *June* 1765, one was caught at a ſmall diſtance below *Caermarthen*, in the river *Towy*, being brought up by the tide which flows as far as the town. It is a fiſh frequent enough in the *Mediterranean*, and alſo in the ocean, where it leads a moſt miſerable life. In its own element it is perpetually haraſſed by the *Dorados*, and other fiſh of prey. If it endeavors to avoid them by having recourſe to the air, it either meets its fate from the *Gulls*, or the *Albatroſs*, or is forced down again into the mouth of

* *Pliny* mentions it under the ſame name, *lib.* ix. *c.* 19.
** This fiſh was ſeen by *John Strange*, Eſq; at *Caermarthen*, who was ſo obliging as to communicate to me the account of

the

the inhabitants of water, who below keep pace with its aerial excurſion. Neither is it unfrequent that whole ſhoals of them fall on board of ſhips that navigate the ſeas of warm climates: it is therefore apparent, that nature in this creature hath ſupplied it with inſtruments that frequently bring it into that deſtruction it ſtrives to avoid, by having recourſe to an element unnatural to it.

The antients were acquainted with this ſpecies: *Pliny* mentions it under the name of *Hirundo*, and ſpeaks of its flying faculty. It is probable that *Oppian* intended the ſame by his Ωκειαι χελιδονες, or the *ſwift ſwallow* fiſh. What *Athenæus* and the laſt cited author mean by the Εξοκοιτος and Αδωνις, is not ſo evident: they aſſert it quitted the water and ſlept on the rocks, from whence it tumbled with precipitation when diſturbed by the unfriendly birds: on theſe accounts Icthyologiſts ſeem to have made it ſynonymous with the *flying fiſh*.

It reſembles the herring in form of the body, but the back is flat: the ſcales large and ſilvery: the dorſal fin is ſmall, and placed near the tail: the pectoral fins, the inſtruments of flight, are almoſt as long as the body: the tail is bifurcated. Deſcr.

Genus XL. Eight branchioſtegous rays.
The belly extremely ſharp, and often ſerrated. HERRING.

I. The HERRING.

Aringha ex *cimbricis* littoribus. *Jovius.* 143.
Hareng, eſpece de Chalcis. *Belon.* 169.
Harengus. *Rondel.* 222. *Geſner piſc.* 410.
Heringk. *Schonevelde.* 37.
Herring. *Wil. Icth.* 219. *Raii ſyn. piſc.* 103.
Clupea maxilla inferiore longiore maculis carens. *Arted. ſynon.* 14. α. β.
Clupea Harengus. Cl. immaculata, maxilla inferiore longiore. *Lin. ſyſt.* 522. *Gronov. Zooph. No.* 348.
Sill. *Faun. ſuec. No.* 357. α.
Stromming. *Faun. ſuec. No.* 357. β.
Stromling*. *Wulff. Boruſs. No.* 50.

Name. THE herring was unknown to the antients, notwithſtanding the words χαλκις and μαινις, are by tranſlators rendered *Halec* **. The characters given of thoſe fiſh are common to ſuch numbers of different ſpecies, as render it impoſſible to ſay which they intended.

Place. Herrings are found from the higheſt northern latitudes yet known, as low as the northern coaſts of *France*; and excepting one inſtance brought by *Dod* †, of a few being once taken in the Bay of *Tangier*, are never found more ſoutherly.

* The herring of the *Baltic*, in all reſpects is like ours, but ſmaller.

** Which word, in ſpite of all *lexicographers*, never ſignified any thing but the *garum* or pickle. *Vide p.* 221.

† *Natural Hiſt. of the Herring*, *p.* 27.

They

They are met with in vaſt ſhoals on the coaſt of *America*, as low as *Carolina*. In *Cheſapeak* Bay is an annual inundation of thoſe fiſh, which cover the ſhores in ſuch quantities as to become a nuſance*. We find them again in the ſeas of *Kamtzchatka*, and poſſibly they reach *Japan*; for *Kæmpfer* mentions, in his account of the fiſh of that country, ſome that are congenerous.

The great winter rendezvous of the herring is within the *Arctic* circle: there they continue for many months in order to recruit themſelves after the fatigue of ſpawning, the ſeas within that ſpace ſwarming with inſect food, in a degree far greater than in our warmer latitudes.

Migrations.

This mighty army begins to put itſelf in motion in the ſpring; we diſtinguiſh this vaſt body by that name, for the word herring is derived from the *German*, *Heer*, an army, to expreſs their numbers.

They begin to appear off the *Shetland* iſles in *April* and *May*; theſe are only forerunners of the grand ſhoal which comes in *June*, and their appearance is marked by certain ſigns by the numbers of birds, ſuch as gannets, and others which follow to prey on them: but when the main body approaches, its breadth and its depth is ſuch as to alter the appearance of the very ocean. It is divided into diſtinct columns of five or ſix miles in length, and three or four in breadth, and they drive the water before them with a kind of rippling: ſometimes they ſink for the ſpace of ten or fifteen minutes, then riſe

* *Cateſby Carol.* ii. xxxiii.

again to the ſurface, and in bright weather reflect a variety of ſplendid colors, like a field of the moſt pretious gems, in which, or rather in a much more valuable light, ſhould this ſtupendous gift of Providence be conſidered by the inhabitants of the *Britiſh* iſles.

Separation.

The firſt check this army meets in its march ſouthward, is from the *Shetland* iſles, which divide it into two parts; one wing takes to the eaſt, the other to the weſtern ſhores of *Great-Britain*, and fill every bay and creek with their numbers; others paſs on towards *Yarmouth*, the great and antient mart of herrings; they then paſs thro' the *Britiſh* channel, and after that in a manner diſappear. Thoſe which take to the weſt, after offering themſelves to the *Hebrides*, where the great ſtationary fiſhery is, proceed towards the north of *Ireland*, where they meet with a ſecond interruption, and are obliged to make a ſecond diviſion; the one takes to the weſtern ſide, and is ſcarce perceived, being ſoon loſt in the immenſity of the *Atlantic*; but the other, which paſſes into the *Iriſh* ſea, rejoices and feeds the inhabitants of moſt of the coaſts that border on it.

Theſe brigades, as we may call them, which are thus ſeparated from the greater columns, are often capricious in their motions, and do not ſhew an invariable attachment to their haunts. We have had in our time inſtances of their entirely quitting the coaſts of *Cardiganſhire*, and viſiting thoſe of *Caernarvonſhire* and *Flintſhire*, where they continued for a few years, but in the preſent year have quite deſerted our ſea, and returned to their old ſeats. The

ſeaſon

ſeaſon of their appearance among us was very late, never before the latter end of *November*: their continuance till *February*.

Were we inclined to conſider this partial migration of the herring in a moral light, we might reflect with veneration and awe on the mighty Power which originally impreſſed on this moſt uſeful body of his creatures, the inſtinct that directs and points out the courſe, that bleſſes and enriches theſe iſlands, which cauſes them at certain and invariable times to quit the vaſt polar deeps, and offer themſelves to our expecting fleets. That benevolent Being has never, from the earlieſt records, been once known to withdraw this bleſſing from the whole, tho' he often thinks proper to deny it to particulars; yet this partial failure (for which we ſee no natural reaſon) ſhould fill us with the moſt exalted and grateful ſenſe of his Providence, for impreſſing ſo invariable and general inſtinct on theſe fiſh towards a ſouthward migration, when the whole is to be benefited, and to withdraw it only when a minute part is to ſuffer. Providential inſtinct.

This inſtinct was given them, that they might remove for the ſake of depoſiting their ſpawn in warmer ſeas, that would mature and vivify it more aſſuredly than thoſe of the frigid zone. It is not from defect of food that they ſet themſelves in motion, for they come to us full and fat, and on their return are almoſt univerſally obſerved to be lean and miſerable. What their food is near the pole, we are not yet informed; but in our ſeas they feed much on the *Oniſcus Marinus*, a cruſtaceous inſect, and ſometimes on their own fry. Spawning. Food.

They

They are in full roe the end of *June*, and continue in perfection till the beginning of winter, when they begin to depoſit their ſpawn. The young herrings begin to approach the ſhores in *July* and *Auguſt*, and are then from half an inch to two inches long: thoſe in *Yorkſhire* are called *Herring Sile* *. Tho' we have no particular authority for it, yet as very few young herrings are found in our ſeas during winter, it ſeems moſt certain that they muſt return to their parental haunts beneath the ice, to repair the vaſt deſtruction of their race during ſummer, by men, fowl and fiſh. Some of the old herrings continue on our coaſts the whole year: the *Scarborough* fiſhermen never put down their nets but they catch a few; but the numbers that remain are not worth mention in compariſon to the numbers that return.

Return.

Herrings vary greatly in ſize. Mr. *Travis* communicated to me the information of an experienced fiſher, who informed him that there is ſometimes taken near *Yarmouth*, a herring diſtinguiſhed by a black ſpot above the noſe; and that he once ſaw one that was twenty-one inches and an half long. He inſiſted that it was a different ſpecies, and varied as much from the common herring as that does from the pilchard. This we mention in order to incite ſome curious perſon on that coaſt to a farther enquiry.

Deſcr.

The eye is very large: the edges of the upper jaw and the tongue are very rough, but the whole mouth

* The *Sueaes* and *Danes* call the old herring *Sill*; but the people of *Sleſw* from whence the *Anglo-Saxons* came call the fry *Sylen*.

is

is void of teeth: the gill covers are very looſe, and open very wide; which occaſions the almoſt inſtant death of the herring when taken out of the water, which is well known, even to a proverb.

The dorſal fin conſiſts of about ſeventeen rays, and is placed beyond the centre of gravity, ſo that when the fiſh is ſuſpended by it, the head immediately dips down: the two ventral fins have nine rays; the pectoral ſeventeen; the anal fourteen: the tail is much forked.

The lateral line is not apparent, unleſs the ſcales are taken off: the ſides are compreſſed: the belly ſharply carinated, but the ridge quite ſmooth, and not in the leſt ſerrated.

The ſcales are large, thin, and fall off with a ſlight touch.

The color of the back and ſides green, varied with blue: the belly ſilvery. **Color.**

The herring fiſhery is of great antiquity: the induſtrious *Dutch* firſt engaged in it about the year 1164: they were in poſſeſſion of it for ſeveral centuries, but at length its value become ſo juſtly to be known, that it gave riſe to moſt obſtinate and well-diſputed wars between the *Engliſh* and them; but ſtill their diligence and ſkill gives them a ſuperiority over us in that branch of trade. **Fiſhery.**

Our great ſtations are off the *Shetland* and *Weſtern Iſles*, and off the coaſt of *Norfolk*, in which the *Dutch* alſo ſhare. *Yarmouth* has long been famous for its herring fair*; that town is obliged, by its

* This fair was regulated by an act, commonly called the *Statute of Herrings*, in the 31ſt year of *Edward* III.

charter

charter, to ſend to the ſheriffs of *Norwich* one hundred herrings, to be made into twenty-four pies, by them to be delivered to the lord of the manor of *Eaſt Carleton*, who is to convey them to the king *. The facetious Doctor *Fuller* ** takes notice of the great repute the county of *Norfolk* was in for this fiſh, and, with his uſual archneſs, calls a red herring a *Norfolk Capon*.

The *Dutch* are moſt extravagantly fond of this fiſh when it is pickled. A premium is given to the firſt buſs that arrives in *Holland* with a lading of this their *ambroſia*, and a vaſt price given for each keg. We have been in the country at that happy minute, and obſerved as much joy among the inhabitants on its arrival, as the *Ægyptians* ſhew on the firſt overflowing of the *Nile*. *Flanders* had the honor of inventing the art of pickling herrings. One *William Beukelen*, of *Biervlet*, near *Sluys*, hit on this uſeful expedient: from him was derived the name *pickle*, which we borrow from the *Dutch* and *German*. It is very ſingular that moſt nations give the name of their favorite diſh to the facetious attendant on every mountebank. Thus the *Dutch* call him PICKLE HERRING; the *Italians*, MACARONI; the *French*, JEAN POTTAGE; the *Germans*, HANS WURST†; and we dignify him with the title of JACK PUDDING.

* *Cambden Britan.* I. 458.
** *Britiſh Worthies.* 238.
† That is, *Jack Sauſage.*

II. The

II. The PILCHARD.

Pilchard. *Fuller's Brit. Worthies.* 194.
Peltzer. *Schonevelde.* 40.
The Pilchard. *Wil. Icth.* 223.
Raii syn. pisc. 104.
Clupea δ. *Arted. synon.* 16.
Pilchard. *Borlase Cornwall.* 272.

THE pilchard appears in vast shoals off the *Cornish* coasts about the middle of *July*, disappear the beginning of winter, yet sometimes a few return again after *Christmas*. Their winter retreat is the same with that of the herring, and their motives for migrating the same. They affect, during summer, a warmer latitude, for they are not found in any quantities on any of our coasts except those of *Cornwall*, that is to say, from *Fowey* harbor to the *Scilly* isles, between which places the shoals keep shifting for some weeks.

The approach of the pilchard is known by much the same signs as those that indicate the arrival of the herring. Persons, called in *Cornwall Huers*, are placed on the cliffs, to point to the boats stationed off the land the course of the fish. By the 1st of *James* I. c. 23, fishermen are empowered to go on the grounds of others to *hue*, without being liable to actions of trespass, which before occasioned frequent lawsuits.

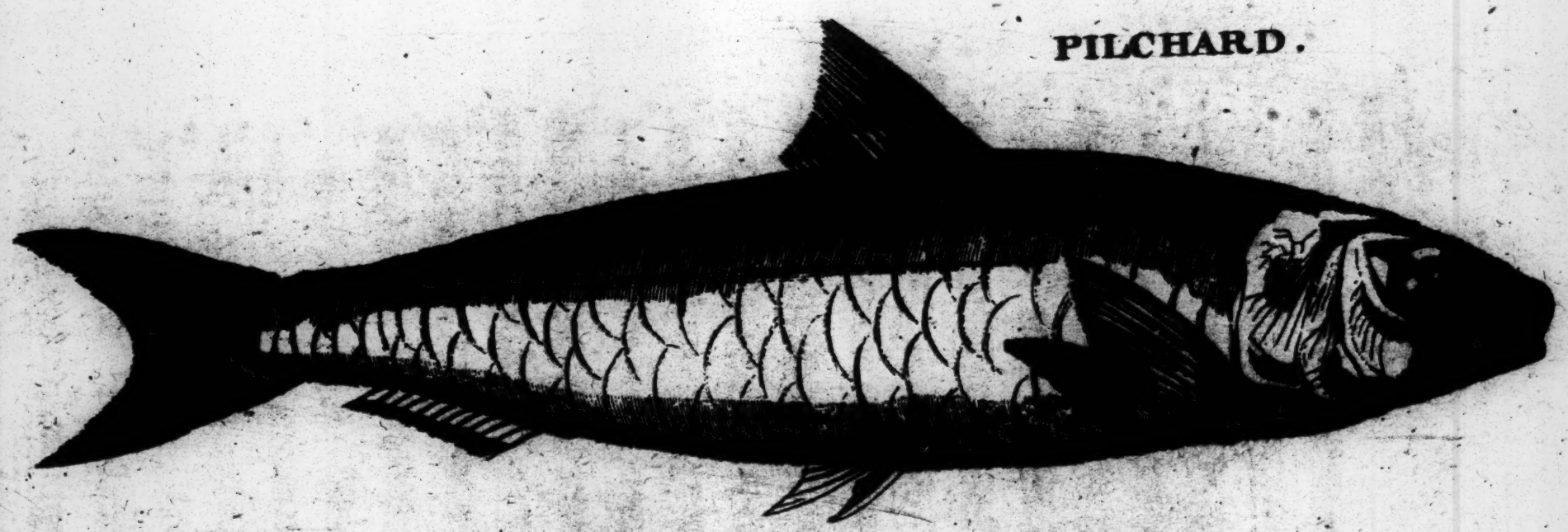
The emoluments that accrue to the inhabitants of that county are great, and are best expressed in the words of Doctor *W. Borlase*, in his account of the *Pilchard* fishery.

" It

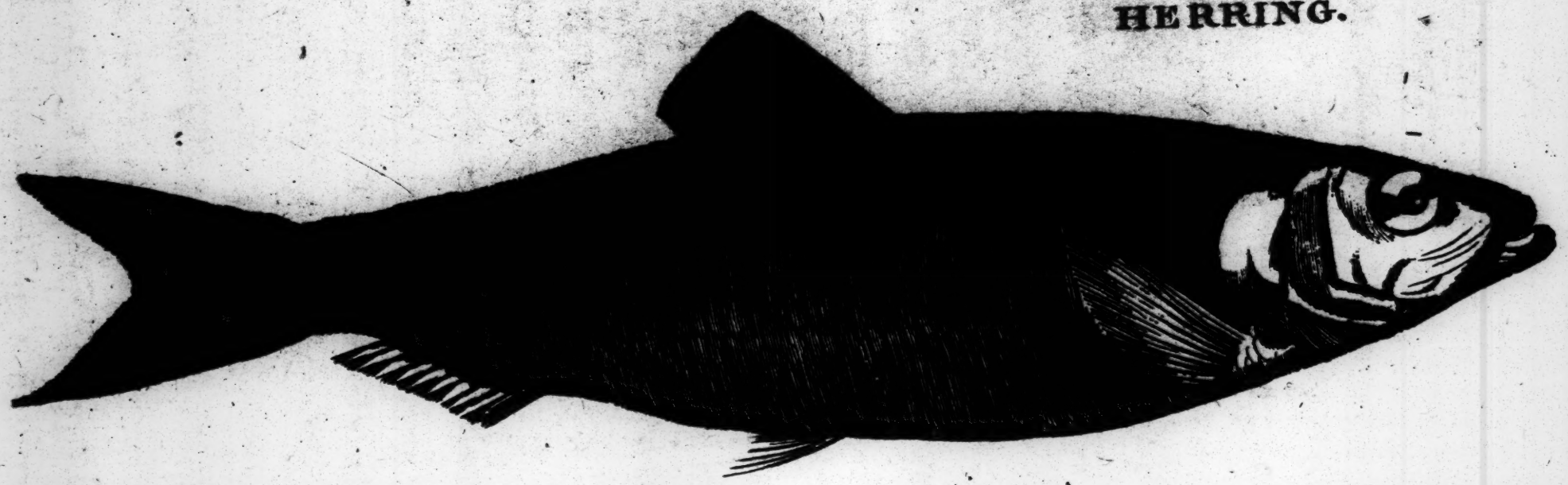
" It employs a great number of men on the ſea, " training them thereby to naval affairs; employs " men, women, and children, at land, in ſalting, " preſſing, waſhing, and cleaning, in making " boats, nets, ropes, caſks, and all the trades de- " pending on their conſtruction and ſale. The " poor is fed with the offals of the captures, the " land with the refuſe of the fiſh and ſalt, the mer- " chant finds the gains of commiſſion and honeſt " commerce, the fiſherman the gains of the fiſh. " Ships are often freighted hither with ſalt, and " into foreign countries with the fiſh, carrying off " at the ſame time part of our tin. The uſual " produce of the number of hogſheads exported " each year, for ten years, from 1747 to 1756 in- " cluſive, from the four ports of *Fawy*, *Falmouth*, " *Penzance*, and *St. Ives*, it appears that *Fawy* has " exported yearly 1732 hogſheads; *Falmouth*, " 14631 hogſheads and two-thirds; *Penzance* and " *Mounts-Bay*, 12149 hogſheads and one-third; " *St. Ives*, 1282 hogſheads: in all amounting to " 29795 hogſheads. Every hogſhead for ten years " laſt paſt, together with the bounty allowed for " each hogſhead exported, and the oil made out " of each hogſhead, has amounted, one year with " another at an average, to the price of one pound " thirteen ſhillings and three-pence; ſo that the " caſh paid for pilchards exported has, at a medium, " annually amounted to the ſum of forty-nine thou- " ſand five hundred and thirty-two pounds ten " ſhillings."

The

PILCHARD.



HERRING.



G Wilkinson del

P Mazell Sculp.



The numbers that are taken at one ſhooting out of the nets, is amazingly great. Doctor *Borlaſe* aſſured me, that on the 5th of *October*, 1767, there were at one time incloſed in *St. Ives*'s *Bay* 7000 hogſheads, each hogſhead containing 35000 fiſh, in all 245000000.

This fiſh has a general likeneſs to the herring, but differs in ſome particulars very eſſentially; we therefore deſcribe it comparatively with the other, having one of each ſpecies before us, both of them of the ſame length, *viz.* nine inches and an half. Deſcr.

The body of the pilchard is leſs compreſſed than that of the herring, being thicker and rounder: the noſe is ſhorter in proportion, and turns up: the under jaw is ſhorter.

The back is more elevated: the belly leſs ſharp: the dorſal fin of the pilchard is placed exactly in the centre of gravity, ſo that when taken up by it, the body preſerves an equilibrium, whereas that of the herring dips at the head: the dorſal fin of the pilchard we examined, being placed only three inches eight tenths from the tip of the noſe; that of the herring four inches one tenth.

The ſcales of the pilchard adhere very cloſely, whereas thoſe of the herring very eaſily drop off.

The pilchard is in general leſs than the herring; the ſpecimen we deſcribe being a very large one.

The pilchard is fatter, or more full of oil.

III. The

III. The SPRAT.

Spratti. *Wil. Ith.* 221. *Raii ſyn. piſc.* 105.
Clupea quadriuncialis, maxilla inferiore longiore, ventre acutiſſimo. *Arted. ſynon.* 17.
Clupea Sprattus. Cl. pinna dorſali radiis tredecim. *Lin. ſyſt.* 523.
Hwuſsbuk. *Faun. ſuec. No.* 358.

MR. *Willoughby* and Mr. *Ray* were of opinion, that theſe fiſh were the fry of the herring: we are induced to diſſent from them, not only becauſe on comparing a ſprat and young herring of equal ſize, we diſcovered ſome ſpecific differences, but likewiſe for another reaſon: the former viſits our coaſts, and continue with us in ſhoals innumerable, when the others in general have retired to the great northern deeps.

They come into the river *Thames*, below bridge, the beginning of *November*, and leave it in *March*, and are, during their ſeaſon, a great relief to the poor of the capital.

At *Graveſend*, and at *Yarmouth*, they are cured like red herrings; they are ſometimes pickled, and are little inferior in flavor to the *Anchovy*, but the bones will not diſſolve like thoſe of the latter. Mr. *Forſter* tells me, that in the *Baltic* they preſerve them in the ſame manner, and call them *Breitling*, i. e. the little deep fiſh, as being deeper than the *Stromling*, or *Baltic* herring.

The

The ſprat grows to about the length of five inches: the body is much deeper than that of a young herring of equal length: the back fin is placed more remote from the noſe than that of the herring, and we think had ſixteen rays. But the great diſtinction between this fiſh, the herring and pilchard, is the belly: that of the two firſt being quite ſmooth, that of the laſt moſt ſtrongly ſerrated. Deſcr.

IV. The ANCHOVY.

Ἔνκραυλος? *Ariſt. Hiſt. an. lib.* vi. *c.* 15.
Ἐνκρασίχολος? *Athenæus. lib.* vii. *c.* 285.
L'Anchoy? *Belon.* 165.
Encraſicholus? *Rondel.* 211. *Geſner piſc.* 68.
Lycoſtomus, ſehe mareneken? *Schonevelde.* 46. *tab.* 5.
Anchovy. *Wil. Icth.* 225. *Raii ſyn. piſc.* 107.
Clupea maxilla ſuperiore longiore. *Arted. ſynon.* 17.
Clupea encraſicolus. *Lin. ſyſt.* 523.

THE true anchovies are taken in vaſt quantities in the *Mediterranean*, and are brought over here pickled. The great fiſhery is at *Gorgona*, a ſmall iſle weſt of *Leghorn*.

Mr. *Ray* diſcovered what he ſuſpected to be the ſame fiſh in the ſea near *Cheſter* *, where he deſcribed them. Notwithſtanding I live near that city, and have been aſſured by my fiſherman that they are found in our æſtuary, it never has been my fortune to procure one.

* *Ray's Letters*, 47.

The *Engliſh* anchovy (according to Mr. *Ray*) is a palm in length, and thicker than a thumb: the body more ſlender, but leſs compreſſed than that of the herring, has no ſcales*, and is pellucid, except where the back bone runs.

It is almoſt of the color of a ſprat: the noſe is ſharp: the upper mandible longer than the lower: the mouth very large for the ſize of the fiſh: the eyes large.

V. The SHAD.

Θρισσα? *Ariſt. Hiſt. an. lib.* ix. *c.* 37. *Strabo lib.* xv. 486. xvii. 566. *Athenæus. lib.* iv. 131. vii. 328. *Oppian Halieut.* I. 244.
Alauſa? *Auſonii Moſella.* 128.
Laccia, chiepa. *Salvian.* 104.
L'Aloſe. *Belon.* 307.
Thriſſa. *Rondel.* 220. *Geſner piſc.* 20.
Bayeke, Meyfiſch. *Schonevelde.* 13.
Shad, or Mother of Herrings. *Wil. Icth.* 227. *Raii ſyn. piſc.* 105.
Clupea apice maxilla ſuperiore bifido, maculis nigris utrinque. *Arted. ſynon.* 15.
Clupea aloſa. Cl. lateribus nigro maculatis, roſtro bifido. *Lin. ſyſt.* 523. *Gronov. Zooph. No.* 347.

NEITHER *Ariſtotle*, *Athenæus*, nor *Oppian*, have deſcribed their Θρισσα with ſuch preciſion, as to induce us to tranſlate it the *Shad*, without affixing to it our ſceptic mark. *Auſonius* has been

* *Schonevelde* ſays, the ſcales of his *Lycoſtomos* fall off very readily; perhaps Mr. *Ray* might ſee them after they had been carried ſome diſtance, when they had loſt their ſcales.

equally

equally negligent in reſpect to his *Alauſa:* all he tells us is, that it was a very bad fiſh:

Stridenteſque focis obſonia plebis ALAUSAS.

Alauſæ crackling on the embers are
Of wretched poverty, th' inſipid fare.

But commentators have agreed to render the Θρισσα of the firſt, and the *Alauſa* of the laſt, by the word *Shad.* Perhaps they were directed by the authority of *Strabo*, who mentions the Θριῶσα the ſuppoſed *Shad*, and the Κεφρευς, or *Mullet*, as fiſh that aſcend the *Nile* at certain ſeaſons, which, with the *Dolphin** of that river, he ſays, are the only kinds that venture up from the ſea for fear of the crocodile. That the two firſt are fiſh of paſſage in the *Nile*, is confirmed to us by *Belonius***, and by *Haſſelquiſt*†. The laſt ſays it is found in the *Mediterranean* near *Smyrna*, and on the coaſt of *Ægypt*, near *Roſetto*; and that in the months of *December* and *January* it aſcends the *Nile*, as high as *Cairo*: that it is ſtuffed with pot marjoram, and when dreſſed in that manner will very nearly intoxicate the eater.

In *Great Britain* the *Severn* affords this fiſh in higher perfection than any other river. It makes its firſt appearance there in *May*, but in very warm ſeaſons in *April*; for its arrival, ſooner or later, depends much on the temper of the air. It continues

* This is the *Dolphin* of the *Nile*, a fiſh now unknown to us. *Pliny lib.* viii. *c.* 25. ſays, it had a ſharp fin on its back, with which it deſtroyed the crocodile, by thruſting it into the belly of that animal, the only penetrable place.

** *Belon. Itin.* 98.

† *P.* 385. 388. *Swediſh* edition.

in the river about two months, and then is ſucceeded by a variety which we ſhall have occaſion to mention hereafter.

The *Severn* ſhad is eſteemed a very delicate fiſh about the time of its firſt appearance, eſpecially in that part of the river that flows by *Glouceſter*, where they are taken in nets, and uſually ſell dearer than ſalmon: ſome are ſent to *London*, where the fiſhmongers diſtinguiſh them from thoſe of the *Thames*, by the *French* name of *Aloſe*.

Whether they ſpawn in this river and the *Wye* is not determined, for their fry has not yet been aſcertained. The old fiſh come from the ſea into the river in full roe. In the months of *July* and *Auguſt*, multitudes of bleak frequent the river near *Glouceſter*; ſome of them are as big as a ſmall herring, and theſe the fiſhermen erroneouſly ſuſpect to be the fry of the ſhad. Numbers of theſe are taken near *Glouceſter* in thoſe months only, but none of the emaciated ſhad are ever caught in their return*.

Twaite. The *Thames* ſhad does not frequent that river till the month of *July*, and is eſteemed a very inſipid coarſe fiſh. About the ſame time, and rather earlier, the variety called near *Glouceſter* the *Twaite*, makes its appearance, and is taken in great numbers in the *Severn*, and is held in as great diſrepute as the ſhad of the *Thames*. The differences between each variety are as follow:

The true *Shad* weighs ſometimes eight pounds, but their general ſize is from four to five.

* *Belon* alſo obſerves, that none are taken in their return on *les prend en montant contre les rivieres, et jamais en deſcendant.*

The

The *Twaite*, on the contrary, weighs from half a pound to two pounds, which it never exceeds.

The twaite differs from a ſmall ſhad only in having one or more round black ſpots on the ſides; if only one, it is always near the gill, but commonly there are three or four, placed one under the other*.

The other particulars agree in each ſo exactly, that the ſame deſcription will ſerve for both. Deſcr.

The head ſlopes down conſiderably from the back, which at the beginning is very convex, and rather ſharp: the body from thence grows gradually leſs to the tail.

The under jaw is rather longer than the upper: the teeth very minute.

The dorſal fin is placed very near the centre, is ſmall, and the middle rays are the longeſt: the pectoral and ventral fins are ſmall: the tail vaſtly forked: the belly extremely ſharp, and moſt ſtrongly ſerrated.

The back is of a duſky blue: above the gills begins a line of dark ſpots, which mark the upper part of the back on each ſide; the number of theſe ſpots is uncertain in different fiſh, from four to ten. Color.

The ſides and belly are ſilvery.

* I muſt here acknowlege my obligations to Doctor *Lyſons*, of *Glouceſter*, for his communications relating to this fiſh, as well as to ſeveral other articles relating to thoſe of the *Severn*.

Genus XLI. The mouth without teeth.
Three branchioſtegous rays.
One dorſal fin. CARP.

*

With bearded mouths.

I. The CARP.

Κυπρινος? *Ariſt. Hiſt. an. lib.* iv. 8. vi. 40. viii. 20. ii. 30. *Oppian Halieut.* I. 101. 592.
Raina Barbara. *Salvian.* 92.
La Carpe. *Belon.* 267.
Cyprinus. *Rondel. fluviat.* 150. *Geſner piſc.* 309.
Cyprinus nobilis, edle Karpe, Karpffe. *Schonevelde.* 32.
Carp. *Wil. Icth.* 162. *Raii ſyn. piſc.* 115.
Cyprinus cirris quatuor, oſſiculo tertio pinnarum dorſi, ac ani uncinulis armato. *Arted. ſynon.* 3.
Cyprinus Carpio. C. pinna ani radiis 9. cirris 4. pinna dorſalis radio ſecundo poſtice ſerrato. *Lin. ſyſt.* 525. *Gronov. Zooph. No.* 330.
Karp. *Faun. ſuec. No.* 359.

THIS is one of the naturalized fiſh of our country, having been introduced here by *Leonard Maſcal*, about the year 1514*, to whom we were alſo indebted for that excellent apple the *pepin*. The many good things that our iſland wanted before that period, are enumerated in this old diſtich:

Turkies, carps, hops, pickerel, and beer,
Came into *England* all in one year.

* *Fuller's Britiſh Worthies, Suſſex.* 113.

As

As to the two laſt articles we have ſome doubts, the others we believe to be true. *Ruſſia* wants theſe fiſh at this day; *Sueden* has them only in the ponds of the people of faſhion; *Poliſh Pruſſia* is the chief ſeat of the carp; they abound in the rivers and lakes of that country, particularly in the *Friſch* and *Curiſch-haff*, where they are taken of a vaſt ſize. They are there a great article of commerce, and ſent in well-boats to *Sueden* and *Ruſſia*. The merchants purchaſe them out of the waters of the *nobleſſe* of the country, who draw a good revenue from this article. Neither are there wanting among our gentry, inſtances of ſome who make good profit of their ponds.

The antients do not ſeparate the carp from the ſea fiſh. We are credibly informed that they are ſometimes found in the harbor of *Dantzick*, between the town and a ſmall place called *Hela*.

Carp are very long lived. *Geſner** brings an inſtance of one that was an hundred years old. They alſo grow to a very great ſize. On our own knowlege we can ſpeak of none that exceeded twenty pounds in weight; but *Jovius*** ſays, that they were ſometimes taken in the *Lacus Larius* (the *Lago di Como*) of two hundred pounds weight; and *Rzaczynſki*†, mentions others taken in the *Dnieſter* that were five feet in length.

They are alſo extremely tenacious of life, and will live for a moſt remarkable time out of water.

* *Geſner piſc.* 312.
** *De piſcibus Romanis.* 131.
† *Hiſt. Nat. Poloniæ.* 142.

An experiment has been made by placing a carp in a net, well wrapped up in wet moſs, the mouth only remaining out, and then hung up in a cellar, or ſome cool place: the fiſh is frequently fed with white bread and milk, and is beſides often plunged into water. Carp thus managed have been known, not only to have lived above a fortnight, but to grow exceedingly fat, and far ſuperior in taſte to thoſe that are immediately killed from the pond*.

Fœcundity. The carp is a prodigious breeder: its quantity of roe has been ſometimes found ſo great, that when taken out and weighed againſt the fiſh itſelf, the former has been found to preponderate. We have forbore in this work to enter into minute calculations of the numbers each fiſh may produce. It has already been moſt ſkilfully performed by Mr. *Harmer*, and printed in the *Philoſophical Tranſactions* of the year 1767. We ſhall, in our Appendix, take the liberty of borrowing ſuch part of his tables of the fœcundity of fiſh, as will demonſtrate the kind attention of Provic ..ce, towards the preſerving ſo uſeful a claſs of animals for the ſervice of its other creatures.

Theſe fiſh are extremely cunning, and on that account are by ſome ſtyled the *river fox*. They will ſometimes leap over the nets, and eſcape that way; at others, will immerſe themſelves ſo deep in the mud, as to let the net paſs over them. They are

* This was told me by a gentleman of the utmoſt veracity, who had twice made the experiment. The ſame fact is related by that pious Philoſopher Doctor *Derham*, in his *Phyſico-Theology*, edit. 9th. 1737. *ch.* 1. *p.* 7. *n. e.*

alſo

alſo very ſhy of taking a bait; yet at the ſpawning time they are ſo ſimple, as to ſuffer themſelves to be tickled, handled, and caught by any body that will attempt it.

This fiſh is apt to mix its milt with the roe of other fiſh, from which is produced a ſpurious breed: we have ſeen the offſpring of the carp and tench, which bore the greateſt reſemblance to the firſt: we have alſo heard of the ſame mixture between the carp and bream. Spurious breed.

The carp is of a thick ſhape: the ſcales very large, and when in beſt ſeaſon of a fine gilded hue. Deſcr.

The jaws are of equal length; there are two teeth in the jaws, or on the tongue; but at the entrance of the gullet, above and below, are certain bones that act on each other, and comminute the food before it paſſes down.

On each ſide of the mouth is a ſingle beard; above thoſe on each ſide another, but ſhorter: the dorſal fin extends far towards the tail, which is a little bifurcated; the third ray of the dorſal fin is very ſtrong, and armed with ſharp teeth, pointing downwards; the third ray of the anal fin is conſtructed in the ſame manner.

II. The

II. The BARBEL.

Barbus. *Auſonius Moſella.* 94.
Barbeau. *Belon.* 299.
Barbus, Barbo. *Salvian.* 86.
Barbus. *Rondel. fluviat.* 194. *Geſner piſc.* 123.
Barbe, Barble. *Schonevelde.* 29.
Barbel. *Wil. Icth.* 259. *Raii ſyn. piſc.* 121.
Cyprinus oblongus, maxilla ſuperiore longiore, cirris quatuor, pinna ani officulorum ſeptem. *Arted. ſynon.* 8.
Cyprinus Barbus. C. pinna ani radiis 7. cirris 4. pinnæ dorſi radio ſecundo utrinque ſerrato. *Lin. ſyſt.* 525. *Gronov. Zooph. No.* 331.
Barbe, Barble. *Wulff Boruſſ. No.* 52.

THIS fiſh was ſo extremely coarſe, as to be overlooked by the antients till the time of *Auſonius*, and what he ſays is no panegyric on it; for he lets us know it loves deep waters, and that when it is grown old it was not abſolutely bad.

Laxos exerces BARBE *natatus,*
Tu melior pejore ævo, tibi contigit uni
Spirantum ex numero non inlaudata ſenectus.

It frequents the ſtill and deep parts of rivers, and lives in ſociety, rooting like ſwine with their noſes in the ſoft banks. It is ſo tame as to ſuffer itſelf to be taken with the hand; and people have been known to take numbers by diving for them. In the ſummer they move about during night in ſearch of food, but towards autumn, and during winter, confine themſelves to the deepeſt holes.

They are the worſt and coarſeſt of freſh water fiſh, and ſeldom eat but by the poorer ſort of people, who

who ſometime boil them with a bit of bacon to give them a reliſh. The roe is very noxious, affecting thoſe who unwarily eat of it with a nauſea, vomiting, purging, and a ſlight ſwelling.

It is ſometimes found of the length of three feet, and eighteen pounds in weight: it is of a long and rounded form: the ſcales not large. Deſcr.

Its head is ſmooth: the noſtrils placed near the eyes: the mouth is placed below: on each corner is a ſingle beard, and another on each ſide the noſe.

The dorſal fin is armed with a remarkable ſtrong ſpine, ſharply ſerrated, with which it can inflict a very ſevere wound on the incautious handler, and even do much damage to the nets.

The pectoral fins are of a pale brown color; the ventral and anal tipped with yellow: the tail a little bifurcated, and of a deep purple: the ſide line is ſtrait.

The ſcales are of a pale gold color, edged with black: the belly is white.

III. The TENCH.

Tinca. *Auſonius Moſella.* 123.
Tinca. *Jovius.* 124.
Tinca, Tenca. *Salvian.* 90.
La Tanche. *Belon.* 325,
Tinca. *Rondel. fluviat.* 157. *Geſner piſc.* 984.
Schley, Slye. *Schonevelde.* 76.
Tench. *Wil. Icth.* 251. *Raii ſyn. piſc.* 117.
Cyprinus mucoſus totus niger, extremitate caudæ æquali. *Arted. ſynon.* 5.
Cyprinus pinna ani radiis 25, cauda integra, corpore mucoſo, cirris 2. *Lin. ſyſt.* 526. *Gronov. Zooph. No.* 328.
Suture, Linnare, Skomakare. *Faun. ſuec. No.* 363.
Schleihe, Schlegen. *Wulff Boruſs. No.* 55.

THE tench underwent the ſame fate with the barbel, in reſpect to the notice taken of it by the early writers; and even *Auſonius*, who firſt mentions it, treats it with ſuch diſreſpect, as evinces the great capriciouſneſs of taſte; for that fiſh, which at preſent is held in ſuch good repute, was in his days the repaſt only of the *Canaille*.

Quis non et virides vulgi ſolatia Tincas *norit?*

It has been by ſome called the *Phyſician* of the fiſh, and that the ſlime is ſo healing, that the wounded apply it as a ſtyptic. The ingenious Mr. *Diaper*, in his *piſcatory* ecloges, ſays, that even the voracious pike will ſpare the tench on account of its healing powers

The *Tench* he ſpares a medicinal kind:
For when by wounds diſtreſt, or ſore diſeaſe,
He courts the ſalutary fiſh for eaſe;
Cloſe to his ſcales the kind phyſician glides,
And ſweats a healing balſam from his ſides *.

* *Ecl.* ii.

Whatever

Whatever virtue its ſlime may have to the inhabitants of the water, we will not vouch for, but its fleſh is a wholeſome and delicious food to thoſe of the earth.

It does not commonly exceed four or five pounds in weight, but we have heard of one that weighed ten pounds; *Salvianus* ſpeaks of ſome that arrived at twenty pounds.

They love ſtill waters, and are rarely found in rivers: they are very fooliſh, and eaſily caught.

Deſcr. The tench is thick and ſhort in proportion to its length: the ſcales are very ſmall, and covered with ſlime.

The irides are red: there is ſometimes, but not always, a ſmall beard at each corner of the mouth.

The color of the back is duſky; the dorſal and ventral fins of the ſame color: the head, ſides, and belly, of a greeniſh caſt, moſt beautifully mixed with gold, which is in its greateſt ſplendor when the fiſh is in the higheſt ſeaſon.

The tail is quite even at the end, and very broad.

IV. The GUDGEON.

Gobio. *Auſonius Moſella.* 132.
Gobio fluviatilis. *Salvian,* 214.
Goujon de riviere. *Belon.* 322.
Gobio fluviatilis. *Rondel. fluviat.* 206. *Geſner piſc.* 399
Gudgeon. *Wil. Icth.* 264. *Raii ſyn. piſc.* 123.
Cyprinus quincuncialis maculoſus, maxilla ſuperiore longiore cirris duobus ad os. *Arted. ſyn n.* 2.
Cyprinus pinna ani radiis 2. *Lin. ſyſt. Nat.* 526. *Gronov. Zooph. No.* 329.

ARISTOTLE mentions the gudgeon in two places; once as a river fiſh, and again as a ſpecies that was gregarious: in a third place he deſcribes it as a ſea fiſh; we muſt therefore conſider the Κωβιος he mentions, *lib.* ix. *c.* 2. and *lib.* viii. *c.* 19. as the ſame with our ſpecies *.

This fiſh is generally found in gentle ſtreams, and is of a ſmall ſize: thoſe few, however, that are caught in the *Kennet*, and *Cole*, are three times the weight of thoſe taken ellewhere. The largeſt we ever heard of was taken near *Uxbridge*, and weighed half a pound.

They bite eagerly, and are aſſembled by raking the bed of the river; to this ſpot they immediately crowd in ſhoals, expecting food from this diſturbance.

Deſcr. The ſhape of the body is thick and round: the irides tinged with red: the gill covers with green and ſilver: the lower jaw is ſhorter than the upper: at each corner of the mouth is a ſingle beard: the back

* The gudgeon is enumerated among the *Syrian* fiſh, by Dr. *Ruſſel. p.* 75.

olive,

olive, ſpotted with black: the ſide line ſtrait; the ſides beneath that ſilvery: the belly white.

The tail is forked; that, as well as the dorſal fin, is ſpotted with black.

V. The BREAM.

La Bremme. *Belon.* 318.
Cyprinus latus ſive Brama. *Rondel. fluviat.* 154. *Geſner piſc.* 316, 317.
Braſſem, Brachſem. *Schonevelde* 33.
Bream. *Wil. Icth.* 248. *Raii ſyn. piſc.* 116.
Cyprinus pinnis omnibus nigreſcentibus, pinna ani oſſiculorum viginti ſeptem. *Arted. ſynon.* 4.
Cyprinus Brama. *Lin. ſyſt.* 531. *Gronov. Zooph. No.* 345.
Braxen. *Faun. ſuec. No.* 360.
Gareikl. *Kram.* 391. Brekmen. *Wulff Boruſs. No.* 66.

THE bream is an inhabitant of lakes, or the deep parts of ſtill rivers. It is a fiſh that is very little eſteemed, being extremely inſipid.

It is extremely deep, and thin in proportion to its length. The back riſes very much, and is very ſharp at the top. The head and mouth are ſmall: on ſome we examined in the ſpring, were abundance of minute whitiſh tubercles; an accident which *Pliny* ſeems to have obſerved befals the fiſh of the *Lago Maggiore*, and *Lago di Como**. The ſcales are very large: the ſides flat and thin.

The dorſal fin has eleven rays, the ſecond of which is the longeſt: that fin, as well as all

* *Duo Lacus* ITALIÆ *in radicibus Alpium*, LARIUS *et* VERBANUS *appellantur, in quibus piſces omnibus annis* VERGILIARUM *ortu exiſtunt, ſquamis conſpicui crebris atque præacutis, clavorum caligarium effigie: nec amplius quam circa eum menſem, viſuntur.* lib. ix. *c.* 18.

the

the reſt, are of a duſky color; the back of the ſame hue: the ſides yellowiſh.

The tail is very large, and of the form of a creſcent.

**

Without beards.

VI. The R U D.

χαραξ? *Athenæus. lib.* viii. 355. *Oppian Halieut.* I. 174.

La Pleſtia? *Belon.* 309. La Roſſe, 319.

Finſcale. *Plot's Oxf.* 184.

Rutilus latior, ſeu Rubellio fluviatilis à Rud, Roud, or Finſcale. *Wil. Icth.* 252. *Raii ſyn. piſc.* 118.

Cyprinus. *Arted. ſynon.* 6. *No.* 8.

Cyprinus pinna ani radiis 15. pinnis rubris. *Lin. ſyſt. Nat.* 530.

Ruda, Caruſſa. *Faun. ſuec. No.* 364.

THIS fiſh is found in the *Charwell*, near *Oxford*, and in the *Witham* in *Lincolnſhire*.

Its body is extremely deep, like that of the bream, but much thicker.

Deſcr. The head is ſmall: the irides yellow, varying in ſome almoſt to redneſs: the noſtrils large: the back vaſtly arched, and ſloping off ſuddenly to the head and tail: the ſcales very large: the ſide line very ſlightly incurvated.

The dorſal fin conſiſts of twenty-one rays; the firſt very ſhort, the ſecond very ſtrong, and ſerrated on each ſide.

The tail a little forked.

The

The back is of an olive color: the ſides and belly of a gold color, with certain marks of red: the ventral and anal fins, and the tail, generally of a deep red: the tail forked.

VII. The ROACH.

La Gardon, Roſchie 2. en *Angleterre*. *Belon*. 316.
Leuciſcus. *Rondel. fluviat.* 191.
Rutilus ſive Rubellus fluviatilis. *Geſner piſc.* 820.
Rottauge. *Schonevelde*. 63.
Roche. *Wil. Icth.* 262. Leuciſcus prior. *Rondel.* 260. *Raii ſyn. piſc.* 122, 121.
Cyprinus *ſargus* dictus. Cyp. iride pinnis ventralibus ac ani plerumque rubentibus. *Arted. ſynon.* 9, 10.
Cyprinus Rutilus Cyp. pinna ani radiis 12. rubicunda. *Lin. ſyſt.* 529. Mort. *Faun. ſuec. No.* 372.
Zert. *Wulff Boruſs. No.* 59.
Altl. *Kram.* 395.

SOUND *as a roach*, is a proverb that appears to be but indifferently founded, that fiſh being not more diſtinguiſhed for its vivacity than many others; yet it is uſed by the *French* as well as us, who compare people of ſtrong health to their *Gardon*, our rocah.

It is a common fiſh, found in many of our deep ſtill rivers, affecting, like the others of this genus, quiet waters. It is gregarious, keeping in large ſhoals. We have never ſeen them very large. Old *Walton* ſpeaks of ſome that weighed two pounds. In a liſt of fiſh ſold in the *London* markets, with the greateſt weight of each, communicated to us by an

intelligent fiſhmonger, is mention of one whoſe weight was five pounds.

The roach is deep, but thin, and the back is much elevated, and ſharply ridged: the ſcales large, and fall off very eaſily.

VIII. The D A C E.

Une vandoiſe, ou Dard. *Belon.* 313.
Leuciſci ſecunda ſpecies. *Rondel.* 192. *Geſner piſc.* 26.
Dace, or Dare. *Wil. Icth.* 260. *Raii ſyn. piſc.* 121.
Cyprinus decem digitorum, rutilo longior, et anguſtior, pinna ani radiorum decem. *Arted. ſynon.* 9.
Cyprinus leuciſcus. Cyp. pinna ani radiis 10. dorſali 9. *Lin. ſyſt.* 528.
Laugele. *Meyer's Ann.* ii. *tab.* 97.

THIS, like the roach, is gregarious, haunts the ſame places, is a great breeder, very lively, and during ſummer is very fond of frolicking near the ſurface of the water. This fiſh and the roche are coarſe and inſipid meat.

Its head is ſmall: the irides of a pale yellow: the body long and ſlender: its length ſeldom above ten inches, tho' in the abovementioned liſt is an account of one that weighed a pound and an half: the ſcales ſmaller than thoſe of the roach.

The back is varied with duſky and blue: the ſides and belly ſilvery: the dorſal fin duſky: the ventral, anal, and caudal fins red, but leſs ſo than thoſe of the former: the tail is very much forked.

IX. The

IX. The C H U B.

Capito. *Auſon. Moſella.* 85.
Squalus, Squaglio. *Salvian* 84.
Le cheveſne, Teſtard, Vilain. *Belon.* 315.
Cephalus fluviatilis. *Rondel. fluviat.* 190.
Capito ſive Cephalus fluviatilis, *Geſner. piſc.* 182.
Chub, or Chevin. *Wil. Ich.* 255. *Raii ſyn. piſc.* 119.
Cyprinus oblongus macrolepidotus, pinna ani officulorum undecim, *Arted. ſynon.* 7.
Cyprinus cephalus. Cyp. pinna ani radiis undecim, cauda integra, corpore ſubcylindrico. *Lin. ſyſt.* 527. *Gronov. Zooph. No.* 339.
Alte. *Meyer's An.* ii. *tab.* 92.
Rapen. *Wulff. Boruſs. No.* 56.

SALVIANUS imagines this fiſh to have been the *Squalus* * of the antients, and grounds his opinion on a ſuppoſed error in a certain paſſage in *Columella* and *Varro*, where he would ſubſtitute the word *Squalus* inſtead of *Scarus*: *Columella* ſays no more than that the old *Romans* payed much attention to their ſtews, and kept even the ſea fiſh in freſh water, paying as much reſpect to the *Mullet* and *Scarus* as thoſe of his days did to the *Muræne* and *Baſs*.

That the *Scarus* was not our *Chub*, is very evident; not only becauſe the *Chub* is entirely an inhabitant of freſh waters, but likewiſe it ſeems improbable that the *Romans* would give themſelves any trouble about the worſt of river fiſh, when they neglected the moſt delicious kinds; all their attention was directed towards thoſe of the ſea: the difficulty of procuring them ſeems to have been the criterion of their value, as is ever the caſe with effete luxury.

* A cartilaginous fiſh, a ſhark. *Vide. Plin. lib.* ix. *c.* 24. *Ovid* alſo ranks his *Squalus* with the ſea fiſh.

Et SQUALUS, *et tenui ſuffuſus ſanguine* MULLUS. *Halieut.* 147.

The chub is a very coarſe fiſh and full of bones: it frequents the deep holes of rivers, and during ſummer commonly lies on the ſurface, beneath the ſhade of ſome tree or buſh. It is a very timid fiſh, ſinking to the bottom on the leſt alarm, even at the paſſing of a ſhadow, but they will ſoon reſume their ſituation. It feeds on worms, caterpillars, graſs-hoppers, beetles, and other coleopterous inſects that happen to fall into the water; and it will even feed on cray-fiſh. It is the only fiſh of this genus that will riſe to a fly.

This fiſh takes its name from its head, not only in our own, but in other languages; we call it *Chub*, according to *Skinner*, from the old *Engliſh*, *Cop*, a head; the *French*, *Teſtard*; the *Italians*, *Capitone*.

It does not grow to a large ſize; we have known ſome that weighed above five pounds, but *Salvianus* ſpeaks of others that were eight or nine pounds in weight.

The body is oblong, rather round, and of a pretty equal thickneſs the greateſt part of the way: the ſcales are large.

The irides ſilvery; the cheeks of the ſame color: the head and back of a deep duſky green: the ſides ſilvery, but in the ſummer yellow: the belly white: the pectoral fins of a pale yellow: the ventral and anal fins red: the tail a little forked, of a browniſh hue, but tinged with blue at the end.

X. The

X. The B L E A K.

Alburnus. *Auſon. Moſella.* 126.
Able ou Ablette. *Belon.* 319.
Alburnus. *Rondel. fluviat.* 208. *Geſner. piſc.* 23.
Albula minor. Witinck, Witek and Blike. *Schonevelde.* ii. *tab.* 1.
Bleak. *Wil. Ictb.* 263. *Raii ſyn. piſc.* 123.
Cyprinus quincuncialis, pinna ani officulorum viginti. *Arted. ſynon.* 10.
Cyprinus alburnus. *Lin. ſyſt.* 531. *Gronov. Zooph. No.* 336.
Loja. *Faun. ſuec. No.* 373.
Spitſlauben, ſchneiderfiſchl. *Kram.* 395.
Ukeleyen. *Wulff. Boruſs. No.* 64.

THE taking of theſe, *Auſonius* lets us know, was the ſport of children,

ALBURNOS *prædam puerilibus hamis.*

They are very common in many of our rivers, and keep together in large ſhoals. Theſe fiſh ſeem at certain ſeaſons to be affected with the vertigo; they tumble about near the ſurface of the water, and are incapable of ſwimming far from the place, but in about two hours recover, and diſappear. Fiſh thus affected the *Thames* fiſhermen call *mad bleaks*.

Artificial pearls are made with the ſcales of this fiſh, and we think of the dace. They are beat into a fine powder, then diluted with water, and introduced into a thin glaſs bubble, which is afterwards filled with wax. The *French* were the inventors of this art. Doctor *Liſter** tells us, that when he was at *Paris*, a certain artiſt uſed in one winter thirty hampers full of fiſh in this manufacture. Artificial pearls.

* Journey to *Paris*, 142.

Deſcr. The bleak ſeldom exceeds five or ſix inches in length: their body is ſlender, greatly compreſſed ſideways, not unlike that of the ſprat.

The eyes are large: the irides of a pale yellow: the under jaw the longeſt: the lateral line crooked: the gills ſilvery: the back green: the ſides and belly ſilvery: the fins pellucid: the ſcales fall off very eaſily: the tail much forked.

White bait. During the month of *July* thoſe appear in the *Thames*, near *Blackwall* and *Greenwich*, innumerable multitudes of ſmall fiſh, which are known to the *Londoners* by the name of *White Bait*. They are eſteemed very delicious when fried with fine flour, and occaſion, during the ſeaſon, a vaſt reſort of the lower order of epicures to the taverns contiguous to the places they are taken at.

There are various conjectures about this ſpecies, but all terminate in a ſuppoſition that they are the fry of ſome fiſh, but few agree to which kind they owe their origin. Some attribute it to the ſhad, others to the ſprat, the ſmelt, and the bleak. That they neither belong to the ſhad, nor the ſprat, is evident from the number of branchioſtegous rays, which in thoſe are eight, in this only three. That they are not the young of ſmelts is as clear, becauſe they want the *pinna adipoſa*, or rayleſs fin; and that they are not the offspring of the bleak is extremely probable, ſince we never heard of the white bait being found in any other river, notwithſtanding the bleak is very common in ſeveral of the *Britiſh* ſtreams: but as the white bait bears a greater ſimilarity to this fiſh than to any other we have mentioned

tioned, we give it a place here as an appendage to the bleak, rather than form a diſtinct article of a fiſh which it is impoſſible to claſs with certainty.

It is evident that it is of the carp or *Cyprinus* genus: it has only three branchioſtegous rays, and only one dorſal fin; and in reſpect to the form of the body is compreſſed like that of the bleak.

Its uſual length is two inches: the under jaw is the longeſt: the irides ſilvery, the pupil black: the dorſal fin is placed nearer to the head than to the tail, and conſiſts of about fourteen rays: the ſide line is ſtrait: the tail forked, the tips black.

The head, ſides, and belly are ſilvery; the back tinged with green,

XI. The MINOW.

Φοξινος? *Ariſt. Hiſt. an.* vi. *c.* 13.
Le Veron. *Belon.* 324.
Piſciculus varius. *Rondel. fluviat.* 205.
Phoſcium qui vulgo *veronus* (quari varius) dicitur, *Bellonius. Geſner piſc.* 715.
Elritze, Elderitze. *Schonevelde.* 57.
Pink, minim, or minow. *Will. Icth.* 268. *Raii ſyn. piſc.* 125.
Cyprinus tridactylus varius oblongus teretiuſculus, pinna ani oſſiculorum octo. *Arted. ſynon.* 12.
Cyprinus Phoxinus. Cyp. pinna ani radiis 8. macula fuſca ad caudam, corpore pellucido. *Lin. ſyſt.* 528.

THIS beautiful fiſh is frequent in many of our ſmall gravelly ſtreams, where they keep in ſhoals.

The body is ſlender and ſmooth, the ſcales being extremely ſmall. It ſeldom exceeds three inches in length.

Deſcr. The lateral line is of a golden color: the back flat, and of a deep olive: the ſides and belly vary greatly in different fiſh; in a few are of a rich crimſon, in others bluiſh, in others white. The tail is forked, and marked near the baſe with a duſky ſpot.

XII. The

XII. The GOLD FISH.

Kingo, the Gold Fiſh. *Kæmpfer Hiſt. Japan.* I. 137.
Kin-yu. *Du Halde Hiſt. China.* I. 19. 315.
Cyprinus auratus. Cyp. pinna ani gemina, cauda tranſverſa bifurca. *Lin. ſyſt.* 527. *Faun. ſuec. tab.* 2. *Gronov. Zooph. No.* 342.
Gold Fiſh. *Edw.* 209.
Kin-yu, ſive carpio auratus. *Baſter. ſubſec.* II. 78.

THESE fiſh are now quite naturalized in this country, and breed as freely in the open waters as the common carp.

They were firſt introduced into *England* about the year 1691, but were not generally known till 1728, when a great number were brought over, and preſented firſt to Sir *Mathew Dekker*, and by him circulated round the neighborhood of *London*, from whence they have been diſtributed to moſt parts of the country.

In *China* the moſt beautiful kinds are taken in a ſmall lake in the province of *Che-Kyang*. Every perſon of faſhion keeps them for amuſement, either in porcellane veſſels, or in the ſmall baſons that decorate the courts of the *Chineſe* houſes. The beauty of their colors, and their lively motions, give great entertainment, eſpecially to the ladies, whoſe pleaſures, by reaſon of the cruel policy of that country, are extremely limited.

In form of the body they bear a great reſem- Deſcr.
blance to a carp. They have been known in this iſland to arrive at the length of eight inches; in their

their native place they are ſaid* to grow to the ſize of our largeſt herring.

The noſtrils are tubular, and form ſort of appendages above the noſe: the dorſal fin and the tail vary greatly in ſhape: the tail is naturally bifid, but in many is trifid, and in ſome even quadrifid: the anal fins are the ſtrongeſt characters of this ſpecies, being placed not behind one another like thoſe of other fiſh, but oppoſite each other like the ventral fins.

The colors vary greatly; ſome are marked with a fine blue, with brown, with bright ſilver; but the general and predominant color is gold of a moſt amazing ſplendor; but their colors and form need not be dwelt on, ſince thoſe who want opportunity of ſeeing the living fiſh, may ſurvey them expreſſed in the moſt animated manner, in the works of our ingenious and honeſt friend Mr. *George Edwards*.

* *Du Halde*, 316.

APPENDIX.

APPENDIX.

Tortoiſe, page 1. The late Biſhop of *Carliſle* informed me that a tortoiſe was taken off the coaſt of *Scarborough* in 1748 or 1749. It was purchaſed by a family at that time there, and a good deal of company invited to partake of it. A gentleman, who was one of the gueſts, told them it was a *Mediterranean* turtle, and not wholeſome: only one of the company eat of it, and it almoſt killed him, being ſeized with a dreadful vomiting and purging.

Toad, 7. Since the printing of that article I have been favored with ſome very curious accounts of this reptile, which will give greater light into its natural hiſtory than I am capable of, from a moſt unphiloſophical but invincible averſion to the whole genus. The facts that will appear in the following lines ſerve to confirm my opinion of its being an innoxious animal, and, I hope, will ſerve to free numbers from a panic that is carried to a degree of infelicity,

city, and alſo to redeem it from a perſecution which the unmerited ill-opinion the world has conceived, perpetually expoſes it to.

The gentlemen I am principally indebted to for my informations are *J. Arſcott*, Eſq; of *Tehott*, in *Devonſhire*, and Mr. *Pitfield*, of *Exeter*. Some of theſe accounts were addreſſed to Doctor *Milles*, Dean of *Exeter*; others to the worthy Prelate abovementioned, to whom I owe theſe and many other agreeable correſpondencies; others again to myſelf.

Mr. *Arſcott*'s letters give a very ample hiſtory of the nature of the toad: they were both addreſſed to Doctor *Milles*, and both were the reſult of certain queries I propoſed, which the former was ſo obliging as to give himſelf the trouble of anſwering in a moſt ſatisfactory manner.

I ſhall firſt take the liberty of citing Mr. *Arſcott*'s letter of *September* the 23d, 1768, which mentions ſome very curious particulars of this innocent reptile, which, for ſuch a number of years found an aſylum, from the good ſenſe of a family

family which ſoared above all vulgar prejudices.

" It would give me the greateſt " pleaſure to be able to inform you " of any particulars worthy Mr. " *Pennant*'s notice, concerning the " toad who lived ſo many years " with us, and was ſo great a favo- " rite. The greateſt curioſity in " it was its becoming ſo remark- " ably tame. It had frequented " ſome ſteps before the hall-door " ſome years before my acquaint- " ance commenced with it, and " had been admired by my father " for its ſize (which was of the " largeſt I ever met with) who " conſtantly payed it a viſit every " evening. I knew it myſelf " above thirty years, and by con- " ſtantly feeding it, brought it to " be ſo tame that it always came " to the candle, and looked up as " if expecting to be taken up and " brought upon the table, where I " always fed it with inſects of all " ſorts: it was fondeſt of fleſh " maggots, which I kept in bran; " it would follow them, and when " within a proper diſtance, would " fix its eye, and remain motion- " leſs for near a quarter of a mi-

" nute,

" nute, as if preparing for the
" ſtroke, which was an inſtanta-
" neous throwing its tongue at a
" great diſtance upon the inſect,
" which ſtuck to the tip by a gluti-
" nous matter: the motion is quick-
" er than the eye can follow*.

" I always imagined that the root
" of its tongue was placed in the
" fore part of its under jaw, and
" the tip towards its throat, by
" which the motion muſt be a half
" circle; by which, when its tongue
" recovered its ſituation, the inſect
" at the tip would be brought to
" the place of deglutition. I was
" confirmed in this by never ob-
" ſerving any internal motion in its
" mouth, excepting one ſwallow the
" inſtant its tongue returned. Poſ-
" ſibly I might be miſtaken, for I
" never diſſected one, but contented
" myſelf with opening its mouth,
" and ſlightly inſpecting it.

" You may imagine that a toad
" generally deteſted (altho' one of
" the moſt inoffenſive of all ani-
" mals) ſo much taken notice of
" and befriended, excited the cu-

* This rapid capture of its prey might give occaſion to the report of its faſcinating powers. *Linnæus* ſays, *Inſecta in fauces faſcino revocat.*

" rioſity

" riosity of all comers to the houſe,
" who all deſired to ſee it fed, ſo
" that even ladies ſo far conquered
" the horrors inſtilled into them by
" nurſes, as to deſire to ſee it.
" This produced innumerable and
" improbable reports, making it
" as large as the crown of a hat,
" &c. &c. This I hope will ac-
" count for my not giving you par-
" ticulars more worth your notice.
" When I firſt read the account in
" the papers of toads ſucking can-
" cerous breaſts, I did not believe
" a word of it, not thinking it poſ-
" ſible for them to ſuck, having
" no lips to embrace the part, and
" a tongue ſo oddly formed; but as
" the fact is thoroughly verified, I
" moſt impatiently long to be fully
" informed of all particulars re-
" lating to it."

Notwithſtanding theſe accounts will ſerve to point out ſome errors I had adopted, in reſpect to this reptile in my firſt ſheet, yet it is with much pleaſure I lay before the public a more authentic hiſtory, collected from Mr. *Arſcott*'s ſecond favor; the anſwer points out my queries, which it is needleſs to repeat.

Tebott,

Tehott, Nov. 1, 1768.

" In reſpect to the queries I ſhall " here give the moſt ſatisfactory " anſwers I am capable of.

" Firſt, I cannot ſay how long " my father had been acquainted " with the toad before I knew it; " but when I firſt was acquainted " with it, he uſed to mention it as " the old toad I've known ſo many " years; I can anſwer for thirty- " ſix years.

" Secondly, No toads that I ever " ſaw appeared in the winter ſea- " ſon. The old toad made its ap- " pearance as ſoon as the warm wea- " ther came, and I always concluded " it retired to ſome dry bank to " repoſe till the ſpring. When we " new-lay'd the ſteps I had two " holes made in the third ſtep on " each, with a hollow of more than " a yard long for it, in which I " imagine it ſlept, as it came from " thence at its firſt appearance.

" Thirdly, It was ſeldom pro- " voked: neither that toad (nor the " multitudes I have ſeen tormented " with great cruelty) ever ſhewed " the leſt deſire of revenge, by " ſpitting or emitting any juice " from their pimples. Sometimes

" upon

" upon taking it up it would let out
" a great quantity of clear water,
" which, as I have often ſeen it do the
" ſame upon the ſteps when quite
" quiet, was certainly its urine, and
" no more than a natural evacuation.

" Fourthly, A toad has no particu-
" lar enmity for the ſpider; he uſed
" to eat five or ſix with his millepides
" (which I take to be its chief food)
" that I generally provided for it, be-
" fore I found out that fleſh maggots,
" by their continual motion, was the
" moſt tempting bait; but when of-
" fered it eat blowing flies and hum-
" ble bees that come from the rat-
" tailed maggot in gutters, or in ſhort
" any inſect that moved. I imagine if
" a bee was to be put before a toad,
" it would certainly eat it to its coſt;
" but as bees are ſeldom ſtirring at
" the ſame time that toads are, they
" can ſeldom come in their way, as
" they ſeldom appear after ſun-riſing,
" or before ſun-ſet. In the heat of the
" day they will come to the mouth of
" their hole, I believe, for air. I once
" from my parlour window obſerved
" a large toad I had in the bank of
" a bowling-green, about twelve at
" noon, a very hot day, very buſy and
" active upon the graſs; ſo uncom-

" mon an appearance made me go out
" to ſee what it was, when I found an
" innumerable ſwarm of winged ants
" had dropped round his hole, which
" temptation was as irreſiſtible as a
" turtle would be to a luxurious al-
" derman.

" Fifthly, Whether our toad ever
" propagated its ſpecies I know not,
" rather think not, as it always ap-
" peared well, and not leſſened in
" bulk, which it muſt have done, I
" ſhould think, if it had diſcharged
" ſo large a quantity of ſpawn as toads
" generally do. The females that are to
" propagate in the ſpring, I imagine,
" inſtead of retiring to dry holes, go
" into the bottom of ponds, and lay
" torpid amongſt the weeds; for to
" my great ſurprize in the middle of
" the winter, having for amuſement
" put a long pole into my pond, and
" twiſted it till it had gathered a large
" volume of weed, on taking it off I
" found many toads, and having cut
" ſome aſunder with my knife, by ac-
" cident, to get off the weed, found
" them full of ſpawn not thoroughly
" formed. I am not poſitive, but
" think there were a few males in
" *March*: I know there are thirty
" males

" males* to one female, twelve or
" fourteen of whom I have ſeen cling-
" ing round a female: I have often
" diſengaged her, and put her into a
" ſolitary male, to ſee with what eager-
" neſs he would ſeize her. They im-
" pregnate the ſpawn as it is drawn
" ** out in long ſtrings, like a neck-
" lace,

* Mr. *John Hunter* has aſſured me that during his reſidence at *Belleiſle*, he diſſected ſome hundreds of toads, yet never met with a ſingle female among them.

** I was incredulous as to the *obſtetrical* offices of the male toad, but ſince the end is ſo well accounted for, and the fact eſtabliſhed by ſuch good authority, belief muſt take place.

Mr. *Demours*, in the Memoirs of the *French* Academy, as tranſlated by Dr. *Templeman*, *vol.* I. 371. has been very particular in reſpect to the male toad, as acting the part of an *Accoucheur*; his account is curious, and clames a place here:

" In the evening of one of the long days in ſummer, Mr.
" *Demours* being in the king's garden perceived two toads *cou-*
" *pled together* at the edge of an hole, which was formed in part
" by a great ſtone at the top.

" Curioſity drew him to ſee what was the occaſion of the mo-
" tions he obſerved, when two facts equally new ſurprized him;
" the *firſt* was the extreme difficulty the female had in laying
" her eggs, inſomuch that ſhe did not ſeem capable of being
" delivered of them without ſome aſſiſtance. The *ſecond* was,
" that the male was mounted on the back of the female, and
" exerted all his ſtrength with his hinder feet in pulling out the
" eggs, whilſt his fore-feet embraced her breaſt.

" In order to apprehend the manner of his working in the
" delivery of the female, the reader muſt obſerve that the paws
" of theſe animals, as well thoſe of the fore-feet as of the hin-
" der, are divided into ſeveral toes, which can perform the
" office of fingers.

" It muſt be remarked likewiſe, that the eggs of this ſpecies
" of toads are included each in a membranous coat that is very
" firm, in which is contained the embryo; and that theſe eggs,
" which are oblong and about two lines in length, being faſten-
" ed one to another by a ſhort but very ſtrong cord form a kind
" of chaplet, the beads of which are diſtant from each other

" lace, many yards long, not in a large
" quantity of jelly, like frogs ſpawn.
" *N. B.* After having held a female
" ſome time in my hand, I have, to
" try if there was any ſmell, put my
" finger a foot under water to a male,
" who has immediately ſeized it, and
" ſtuck to as firmly as if it was a fe-
" male. *Quere*, Would they ſeize a
" finger or rag that had touched a
" cancerous ulcer?

" Sixthly, Inſects being their food,
" I never ſaw any toad ſhew any lik-
" ing or diſlike to any plant*.

" Seventhly, I hardly remember
" any perſons taking it up except
" about the half of their length. It is by drawing this cord
" with his paw that the male performs the function of a mid-
" wife, and acquits himſelf in it with a dexterity that one would
" not expect from ſo lumpiſh an animal.

" The preſence of the obſerver did not a little diſcompoſe
" the male; for ſome time he ſtopped ſhort, and threw on the
" *curious impertinent* a fixed look that marked his diſquietneſs and
" fear; but he ſoon returned to his work with more precipita-
" tion than before, and a moment *after* he appeared undetermi-
" ned whether he ſhould continue it or not. The female like-
" wiſe diſcovered her uneaſineſs at the ſight of the ſtranger, by
" motions that interrupted ſometimes the male in his operation.
" At length, whether the ſilence and ſteady poſture of the ſpec-
" tator had diſſipated their fear, or that the *caſe* was urgent, the
" male reſumed his work with the ſame vigour, and ſucceſs-
" fully performed his function."

* This queſtion aroſe from an aſſertion of *Linnæus*, that the toad delighted in filthy herbs. *Delectatur Cotula, Actæa, Stachyde fœtidis.* The unhappy deformity of the animal ſeems to be the only ground of this as well as another miſrepreſentation, of its conveying a poiſon from its pimples, its touch, and even its breath. *Verrucæ lacteſcentes venenatæ infuſæ tactu, anhelitu.*

" my

" my father and myſelf: I do not
" know whether it had any particular
" attachment to us.

" Eighhtly, In reſpect to its end, I
" anſwer this laſt quere. Had it not
" been for a tame raven, I make no
" doubt but it would have been now
" living; who one day ſeeing it at
" the mouth of its hole, pulled it out,
" and although I reſcued it, pulled
" out one eye, and hurt it ſo, that
" notwithſtanding its living a twelve-
" month it never enjoyed itſelf, and
" had a difficulty of taking its food,
" miſſing the mark for want of its
" eye: before that accident had all
" the appearance of perfect health."

What Mr. *Pitfield* communicated to me ſerves farther to evince the patient and pacific diſpoſition of this poor animal. If I am thought to dwell too long on the ſubject, let it be conſidered, that thoſe who have moſt unprovoked enemies, and feweſt friends, clame the greateſt pity, and warmeſt vindication. This reptile has undergone all ſorts of ſcandal; one author makes it the companion of an atheiſt *; and *Milton* ** makes the devil itſelf

* A great toad was ſaid to have been found in the lodgings of *Vanini*, at *Toulouſe*. *Vide*. *Johnſon*'s Shakeſpear.

** *Paradiſe loſt*.

its inmate; in a word, all kind of evil paſſions have been beſtowed on it: It is but juſtice therefore to ſay ſomething in behalf of an animal that has of late had ſo many tryals of its temper, from experiments occaſioned by the new diſcovery of its cancer-ſucking qualities. It has born all the handling, teizing, bagging, &c. &c. without the leſt ſign of a vindictive diſpoſition; but has even made itſelf a ſacrifice to the diſcharge of its office: this I know from the reſult of much enquiry; would I could contradict what is aſſerted, p. 10, of the inefficacy of the tryals made of them in the moſt horrible of diſeaſes; for at this time I myſelf cannot bring one proof of the ſucceſs. But I would not have any one diſcouraged from the purſuit of the remedy. Heaven opens to us gradually its favors: the *loadſtone* was for ages a meer matter of ignorant amaze at its attractive qualities: *mercury* was a ſuppoſed poiſon, and the terror of phyſicians: we now wonder at the powers of electricity, and are ſtill but partially acquainted with its uſes: the toad, the object of horror even in the moſt enlightened times, is found to be perfectly innocent; it has certainly contributed to the eaſe (and as has been ſaid to the cure)

cure) of the unhappy cancered; let the following facts ſpeak for themſelves; they come from perſons of undoubted veracity, and will ſufficiently eſtabliſh the truth of the beneficent qualities of this animal.

The firſt paper relating to it is very ingeniouſly drawn up by Mr. *Pitfield*, for the information of Doctor *Littleton*, Biſhop of *Carliſle*, (now happy) who immediately honored me with the copy.

Exon, Aug. 29, 1768.

" Your lordſhip muſt have taken " notice of a paragraph in the papers, " with regard to the application of " toads to a cancered breaſt. A pa- " tient of mine has ſent to the neigh- " borhood of *Hungerford*, and brought " down the very woman on whom the " cure was done. I have, with all " the attention I am capable of, at- " tended the operation for eighteen or " twenty days, and am ſurprized at " the phænomenon. I am in no ex- " pectation of any great ſervice from " the application: the age, conſtitu- " tion, and thoroughly cancerous con- " dition of the perſon, being uncon- " querable barriers to it. How an " ail of that kind, abſolutely local, in " an otherwiſe ſound habit, and of a

" likely age, might be relieved, I can-
" not ſay. But as to the operation,
" thus much I can aſſert, that there is
" neither pain nor nauſeouſneſs in it.
" The animal is put into a linen bag,
" all but its head, and that is held to
" the part. It has generally inſtantly
" laid hold of the fouleſt part of the
" ſore, and ſucked with greedineſs
" until it dropped off dead. It has
" frequently happened that the crea-
" ture has ſwolen immenſely, and
" from its agonies appeared to be in
" great pain. I have weighed them
" for ſeveral days together, before and
" after the application, and found
" their increaſe of weight, in the dif-
" ferent degrees, from a drachm to
" near an ounce. They frequently
" ſweat exceedingly, and turn quite
" pale: ſometimes they diſgorge, reco-
" ver, and become lively again. I think
" the whole ſcene is ſurpriſing, and a
" very remarkable piece of natural
" hiſtory. From the conſtant inof-
" fenſiveneſs which I have obſerved in
" them, I almoſt queſtion the truth of
" their poiſonous ſpitting. Many peo-
" ple here expect no great good from
" the application of toads to cancers;
" and where the diſorder is not abſo-
" lutely local, none is to be expected;

" where

" where it is, and ſeated in any part,
" not to be well come at for extirpa-
" tion, I think it is hardly to be ima-
" gined, but that the having it ſucked
" clean as often as you pleaſe, muſt
" give great relief. Every body
" knows, that dogs licking of ſores
" cures them, which is, I ſuppoſe,
" chiefly by keeping them clean. If
" there is any credit to be given to
" hiſtory, poiſons have been ſucked
" out,

------ *Pallentia Vulnera lambit*
Ore Venera trahens.

" are the words of *Lucan* on the oc-
" caſion: if the people to whom theſe
" words are applied, did their cure by
" immediately following the injection
" of the poiſon, the local confinement
" of another poiſon brings the caſe to
" a great degree of ſimilarity.

" I hope I have not tired your lord-
" ſhip with my long tale, as it is a true
" one, and in my apprehenſion a curi-
" ous piece of natural hiſtory, I could
" not forbear communicating it to you.
" I own I thought the ſtory in the pa-
" pers to be an invention, and when I
" conſidered

" conſidered the inſtinctive principle " in all animals of ſelf preſervation, " I was confirmed in my diſbelief; but " what I have related I ſaw, and all " theory muſt yield to fact. It is only " the *Rubeta*, the land toad, which " has the property of ſucking; I can- " not find any the leſt mention of " the property in any one of the old " naturaliſts. My patient can bear to " have but one applied in twenty-four " hours: the woman who was cured " had them on day and night, with- " out intermiſſion, for five weeks. " Their time of hanging at the breaſt " has been from one to ſix hours."

The other account is of a woman now under the experiment, which I give, as delivered to me from undoubted authority. If the event is proſperous, an early opportunity ſhall be taken of informing the public of it in ſome of the news-papers, with all circumſtances of place, name, &c. which at preſent it is needleſs to mention.

About ſix years ago a poor woman received a cruſh on her breaſt by the fall of a pail; a cancerous complaint was the reſult.

Laſt

Laſt year her diſorder increaſed to an alarming degree; ſhe had five wounds on her breaſts, one exceeding large, from which fragments of bone worked out, giving her vaſt pain; and at the ſame time there was a great diſcharge of thin yellow matter: ſhe was likewiſe reduced to a meer ſkeleton.

All her left ſide and ſtomach was much ſwelled; her fingers doughy and diſcolored.

On the 25th of *September*, 1768, the firſt toad was applied; between that and the 29th ſhe uſed ſeven, and had that night better reſt. She ſwallowed with greater eaſe, for before that time there was ſome appearance of humor in her neck, and a difficulty of getting any thing down.

October 16th, the patient better. It was thought proper as winter was coming on, and of courſe it would be very difficult to procure a number of toads, to apply more at a time, ſo three were put on at once. The ſwelling in the arm abated, and the woman's reſt was good.

During theſe tryals ſhe took an infuſion of *Water Parſnep* with *Pulvis Cornacchini.*

December

December 18th, continued to look ill, but finds herſelf better: two of the wounds were now healed.

She was always moſt eaſy when the toads were ſucking, of which ſhe killed vaſt numbers in the operation.

January 1769. The laſt account that was received, informing that the patient was better.

The remarks made on the animals, are theſe:

Some toads died very ſoon after they had ſucked; others lived about a quarter of an hour, but ſome lived much longer: for example, one that was applied about ſeven o'clock ſucked till ten, and died as ſoon as it was taken from the breaſt; another that immediately ſucceeded continued till three o'clock, but dropped dead from the wound, each ſwelled exceedingly, and turned of a pale color.

Theſe toads did not ſeem to ſuck greedily, and would often turn their heads away; but during the time of ſucking were heard to ſmack their lips like a young child.

As thoſe reptiles are apt by their ſtruggles to get out of the bag, the open end ought to be made with an open hem, that the ſtring may run the more

more readily, and faſten tightly about the neck.

It would be improper to quit the ſubject without mentioning the origin of this ſtrange diſcovery, which was owing to a woman near *Hungerford*, who labored under a cancerous complaint in her breaſt, which had long baffled all applications.

The account ſhe gives of the manner in which ſhe came by her knowlege is very ſingular, and I may ſay apocryphal. She ſays of herſelf, that in the height of her diſorder ſhe went to ſome church where there was a vaſt crowd: on going into a pew, ſhe was accoſted by a ſtrange clergyman, who, after expreſſing compaſſion for her ſituation, told her that if ſhe would make ſuch an application of living toads* as abovementioned, ſhe would be well.

This dark ſtory is all we can collect relating to the affair. It is our opinion that ſhe ſtumbled upon the diſcovery by accident, and that having ſet up for a cancer doctreſs, ſhe thought it neceſſary to amuſe the world with

* I have been told that ſhe not only made uſe of living toads, but permitted the dead ones to remain at her breaſt, by way of cataplaſms, for ſome weeks.

this

this myſterious relation *. For it ſeems very unaccountable, that this unknown gentleman ſhould expreſs ſo much tenderneſs for this ſingle ſufferer, and not feel any for the many thouſands that daily languiſh under this terrible diſorder: would he not have made uſe of this invaluable noſtrum for his own emolument, or at leſt, by ſome other means have found a method of making it public for the good of mankind.

Here I take leave of the ſubject, which I could not do without expreſſing my doubts, as to the method of the woman's obtaining her information; but in reſpect to the authenticity of this new-diſcovered property of the toad, facts eſtabliſh it beyond diſpute. Let the humane wiſh for ſpeedy proofs of the efficacy; and for the ſatisfaction of the world, let thoſe who are capable of giving indiſputable proofs of the ſucceſs, take the earlieſt opportunity of making the public acquainted with ſo intereſting an affair.

* Mr. *Valentine Greatraks*, who about the year 1664, perſuaded himſelf that he could cure diſeaſes, by ſtroking them out of the parts affected with his hand; and the famous *Bridget Boſtock*, of *Cheſhire*, who worked cures by virtue of her faſting ſpittle, both came by their art in a manner ſupernatural, but by *faith many were made whole*.

Viper, 21. *Keyſler*, *vol.* III. 237, relates, that Sir *Kenelm Digby* uſed to feed his wife, who was a moſt beautiful woman, with capons fattened with the fleſh of vipers.

The traveller does not quote his authority; but the lady did not long ſurvive this ſtrange regimen.

Blind worm, 26. In *Sueden* is a ſmall reddiſh ſerpent, called there the *Aſping*, the *Coluber Cherſea*, of *Linnæus*: it is ſmall, and of a reddiſh color, and its bite is ſaid to be mortal.

May it not have been from a ſerpent of this ſpecies, that the man in *Oxfordſhire* received his death?

Glain Neidr, 23. This reminds me of another *Welch* word that is explanatory of the cuſtoms of the antients, ſhewing their intent in the uſe of the plant *Vervaine* in their luſtrations; and why it was called by *Dioſcorides Hierobotane*, or the ſacred plant, and eſteemed proper to be hung up in their rooms.

The *Britiſh* name *Cas gan Cythrawl*, or the Devil's averſion, may be a modern appellation, but is likewiſe called *Y Dderwen ſendigaid*, the holy oak, which evidently refers to the *Druids* groves.

Pliny

Pliny informs us, that the *Gauls* uſed it in their incantations, as the *Romans* and *Greeks* did in their luſtrations. *Terence*, in his *Andria*, ſhews us the *Verbena* was placed on altars before the doors of private houſes in *Athens*; and from the ſame paſſage in *Pliny* *, we find the *Magi* were guilty of the moſt extravagant ſuperſtition about this herb. Strange it is that ſuch a veneration ſhould ariſe for a plant endued with no perceptible qualities; and ſtranger ſtill it ſhould ſpread from the fartheſt north to the boundaries of *India*. So general a conſent, however, proves the cuſtom aroſe before the different nations had loſt all communication with each other.

Baſking Shark, 78. This ſpecies, on comparing a rude ſketch of one taken in the *Caernarvonſhire* ſeas, with an engraving of the *Squalus Maximus* in Biſhop *Gunner*'s *Acta Nidroſiana*, we find them to be the ſame, and that it has a ſmall anal fin, which probably was overlooked by the *Welch* fiſhermen.

Sturgeon, 96. The mouth of the ſturgeon when dead is always open; when alive it can

* *Lib.* XXV. *cap.* 9.

cloſe

cloſe or open it at pleaſure, by means of certain muſcles, which alſo aſſiſt it in protruding or drawing it in. *Pliny* ſpeaking of his *Acipenſer*, makes it ſynonymous with the *Elops*, *Quidam eum* ELOPEM *vocant*.

Ballan. This is a kind of *Wraſſe**, ſent from *Scarborough* by Mr. *Travis*, differing from the other ſpecies. They appear during ſummer in great ſhoals off *Filey-Bridge*: the largeſt weigh about five pounds.

It was of the form of the common *wraſſe*, only between the dorſal fin and the tail was a conſiderable ſinking: above the noſe was a deep ſulcus: on the fartheſt cover of the gills was a depreſſion radiated from the center.

It had only four branchioſtegous rays.

The dorſal fin had thirty-one rays, twenty ſpiny, eleven ſoft; the laſt branched, and much longer than the ſpiny rays.

The pectoral fins had fourteen; the ventral ſix; the firſt of which was ſhort and ſpiny: the anal twelve; the three firſt ſpiny, the nine others branched and ſoft.

* *Vide p.* 203.

The tail was rounded at the end; at the bottom, for about a third part of the way, between each ray was a row of ſcales.

The color in general was yellow, ſpotted with orange.

The plate of this fiſh is placed at p. 204.

Fœcundity of fiſh, p. 302.

Fiſh.	Weight, oz.	dr.	Weight of ſpawn. grains.	Fœcundity.	Time.
Carp	25	5	2571	203109	*April* 4.
Codfiſh			12540	3686760	*Dec.* 23.
Flounder	24	4	2200	1357400	*March* 14.
Herring	5	10	480	36960	*Oct.* 25.
Mackrel	18	0	1223½	546681	*June* 18.
Perch	8	9	765½	28323	*April* 5.
Pike	56	4	5100½	49304	*April* 25.
Roach	10	6½	361	81586	*May* 2.
Smelt	2	0	149½	38278	*March* 21.
Sole	14	8	542½	100362	*June* 13.
Tench	40	0		383252*	*May* 28.

* Some part of the ſpawn of this fiſh was by accident loſt, ſo that the account here is below the reality. *Vide Phil. Tranſ.* 1767.

CATA-

CATALOGUE

OF THE

Animals deſcribed in this Volume.

With their BRITISH Names.

REPTILES.

1	SPINOUS Tortoiſe,	Melwioges.
2	Common Frog,	Llyffant melyn.
3	Gibbous Frog,	Llyffant melyn cefn grwm.
4	Toad,	Llyffant du, Llyffant dafadenog.
5	Natter Jack,	
6	Scaly Lizard,	
7	Warty Lizard,	Genau goeg ddafadenog.
8	Brown Lizard,	frech.
9	Little Brown Lizard,	leiaf.
10	Snake-ſhaped Lizard,	naredig.
11	Viper,	Neidr, Neidr du, Gwiber
12	Snake,	Neidr fraith, Neidr y tomenyd.
13	Blindworm, or Slow-worm,	Pwl dall.

It is to *Richard Morris*, Eſq; that the public is indebted for the *Britiſh* names.

F I S H.

14	Common Whale,	Morfil Cyffredin.
15	Pike-headed Whale,	Penhwyad.
16	Fin-fiſh,	Barfog.
17	Round-lipped Whale,	Trwngrwn.
18	Beaked Whale,	
19	Blunt-headed Cachalot	
20	Great-headed	Penfawr.
21	Round-headed	Pengrwn.
22	High-finned	Uchel aden.
23	Dolphin,	Dolffyn.
24	Grampus,	Morhwch, Morfochyn.
25	Porpeſſe,	Llamhydydd.
26	Lamprey,	Llyſowen bendol, Llamprai.
27	Leſſer Lamprey,	Lleprog.
28	Pride,	
29	Skate,	Cath fôr, morcath, Rhaien.
30	Sharp-noſed Ray,	Morcath drwynfain.
31	Rough Ray,	
32	Cramp Ray,	Swithbyſg.
33	Thornback,	Morcath bigog.
34	Sting Ray,	Morcath cefn.
35	Angel-fiſh,	Maelgi.
36	Picked Dog-fiſh,	Ci Pegod, Picewd.
37	Baſking Shark,	
38	White Shark,	Morgi gwin.
39	Blue Shark,	Morgi glas, y Sierc.

40	Sea Fox,	Llwynog mor.
41	Tope,	Ci glas.
42	Greater Dog-fiſh,	Ci yſgarmes, morgi mawr
43	Leſſer Dog-fiſh,	
44	Smooth Hound,	Ci Llyfn.
45	Porbeagle,	
46	Common Fiſhing Frog,	Morlyffant, Llyffanbyſg.
47	Long Fiſhing Frog,	Morlyffant hir.
48	Sturgeon,	Iſtwrſion.
49	Oblong Sun-fiſh,	Heulbyſg.
50	Short Sun-fiſh,	
51	Lump-fiſh,	Jar-fôr.
52	Sea Snail,	Môr falwen.
53	Longer Pipe-fiſh,	
54	Shorter	
55	Little or Sea Adder,	Mor Neidr.
56	Eel,	Llyſowen.
57	Conger,	Mor Llyſowen, Cyngyren
58	Sea Wolf,	Morflaidd.
59	Sand Eel,	Llamrhiaid, Pyſgod by-chain.
60	Morris,	Morys.
61	Sword-fiſh,	Cleddytbyſg.
62	Dragonet,	
63	Leſſer Dragonet,	
64	Weever,	Mor wiber, Pigyn aſtrus.
65	Leſſer Weever,	
66	Common Codfiſh,	Codſyn.
67	Torſk,	
68	Hadock,	Hadoc.

69	Whiting Pout,	Cod lwyd.
70	Bib,	Deillion.
71	Poor,	Cwdyn ebrill.
72	Coal-fiſh,	Chwetlyn glas.
73	Pollack,	Morlas.
74	Whiting,	Chwitlyn gwyn.
75	Hake,	Cegddu.
76	Leſſer Hake,	
77	Leſt Hake,	
78	Ling,	Honos.
79	Burbot,	Llefen, Llefenan.
80	Spotted Whiſtle-fiſh,	
81	Brown Whiſtle-fiſh,	
82	Creſted Blenny,	
83	Gattorugine,	
84	Smooth Blenny,	
85	Spotted Blenny,	
86	Viviparous Blenny,	
87	Black Goby,	
88	Spotted Goby,	
89	Bull Head,	Pentarw, Bawd y melinydd.
90	Pogge,	Penbwl.
91	Father Laſher,	
92	Doree,	Sion dori.
93	Holibut,	Lleden ffreinig.
94	Whiff,	
95	Plaiſe,	Lleden frech.
96	Flounder,	Lleden 'ddu.
97	Dab,	Lleden gennog, Lleden dwfr croyw.
98	Smear Dab,	

99 Sole,

99	Sole,	Tafod yr hydd, Tafod yr ych.
100	Smooth Sole,	
101	Turbot,	Lleden chwith, Torbwt.
102	Pearl,	Perl.
103	Gilt Head,	Peneuryn, Eurben.
104	Sea Bream,	Brôm y môr.
105	Leſſer Sea Bream,	
106	Opah,	
107	Wraſſe,	Gwrach.
108	Bimaculated	
109	Trimaculated	
110	Striped	
111	Gibbous	
112	Goldfinny,	
113	Comber.	
114	Cook,	
115	Ballan,	
116	Perch,	Perc.
117	Baſſe,	Draenog, Gannog.
118	Ruffe,	
119	Black Ruffe,	
120	Three ſpined Stickle-back,	Sil y dom, Pyſgod y gath.
121	Ten ſpined	Pigowgbyſg.
122	Fifteen ſpined	Silod y môr.
123	Mackrel,	Macrell.
124	Tunny,	Macrell Sopaen.
125	Scad,	
126	Red Surmullet,	Hyrddyn coch.
127	Striped	

128 Grey

128	Grey Gurnard,	Penhaiarn llwyd, Penhaiernyn.
129	Red Gurnard,	Penhaiarn coch.
130	Piper,	Pibyd.
131	Tub Fiſh,	Yſgyfarnog y môr.
132	Streaked Gurnard,	
133	Loche,	Crothell yr afon.
134	Salmon,	Gleiſiedyn, Eog, Maran *Talieſin*.
135	Grey,	Penllwyd, Adfwlch.
136	Bull Trout,	
137	Trout,	Brithyll.
138	Samlet,	Brith y gro, Silod brithion.
139	Charr,	Torgoch.
140	Grayling,	Brithyll rheſtrog, Glaſgangen.
141	Smelt,	Brwyniaid.
142	Gwiniad,	Gwiniedyn.
143	Pike,	Penhwyad.
144	Sea Pike,	Môr nodwydd, Corn big.
145	Argentine,	
146	Atherine,	
147	Mullet,	Hyrddyn, Mingrwn.
148	Flying Fiſh.	
149	Herring,	Pennog yſgaden.
150	Pilchard,	Pennog mair.
151	Sprat,	Coeg Bennog, Sil penwaig.
152	Anchovy,	
153	Shad,	Herlyn, Herling.

154	Carp,	Carp, Cerpyn.
155	Barbel,	Barfbyſg, y Barfog.
156	Tench,	Gwrachen, Iſgretten.
157	Gudgeon,	Crothel,
158	Bream,	Brêm.
159	Rud,	Rhuddgoch.
160	Roach,	Rhyfell.
161	Dace,	Darſen, Golenbyſg.
162	Chub,	Penci, Cochgangen.
163	Bleak,	Gorwynbyſg.
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